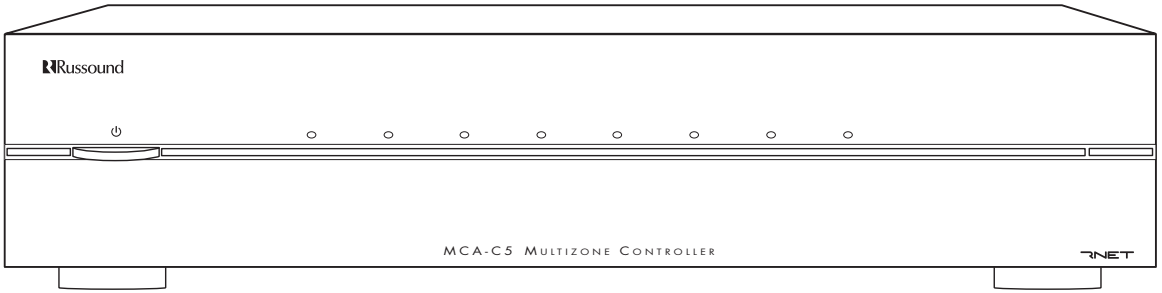
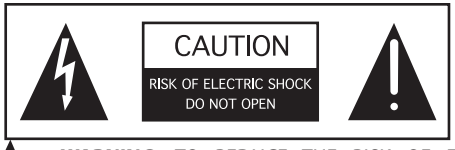
Russound®




# MCA-C5

## 8 Source Multizone Controller Amplifier
## User and Installation Manual




**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

**CAUTION:** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### Safety Instructions

1. Read Instructions - All the safety and operating instructions should be read before the appliance is operated.
2. Retain Instructions - The safety and operating instructions should be retained for future reference.
3. Heed Warnings - All warnings on the appliance in the operating instructions should be adhered to.
4. Follow Instructions - All operating and user instructions should be followed.
5. Water and Moisture - The appliance should not be used near water; for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.
6. Carts and Stands - The appliance should be used only with a cart or stand that is recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the appliance and cart combination to overturn.

7. Wall or Ceiling Mounting - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings, or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization - Precaution should be taken so that the grounding or polarization means of an appliance is not defeated.
12. Power Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, receptacles, and the point where they exit from the appliance.
13. Cleaning - The appliance should be cleaned only as recommended by the manufacturer.
14. Non-Use Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time. To remove all power (supply mains) from the appliance, remove the plug from the wall outlet.
15. Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through the openings.
16. Damage Requiring Service - The appliance should be serviced by qualified service personnel when:
    A. The power supply cord or the plug has been damaged; or
    B. Objects have fallen, liquid has been spilled into the appliance; or
    C. The appliance has been exposed to rain; or
    D. The appliance does not appear to operate normally; or
    E. The appliance has been dropped or the enclosure is damaged.
17. Servicing - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

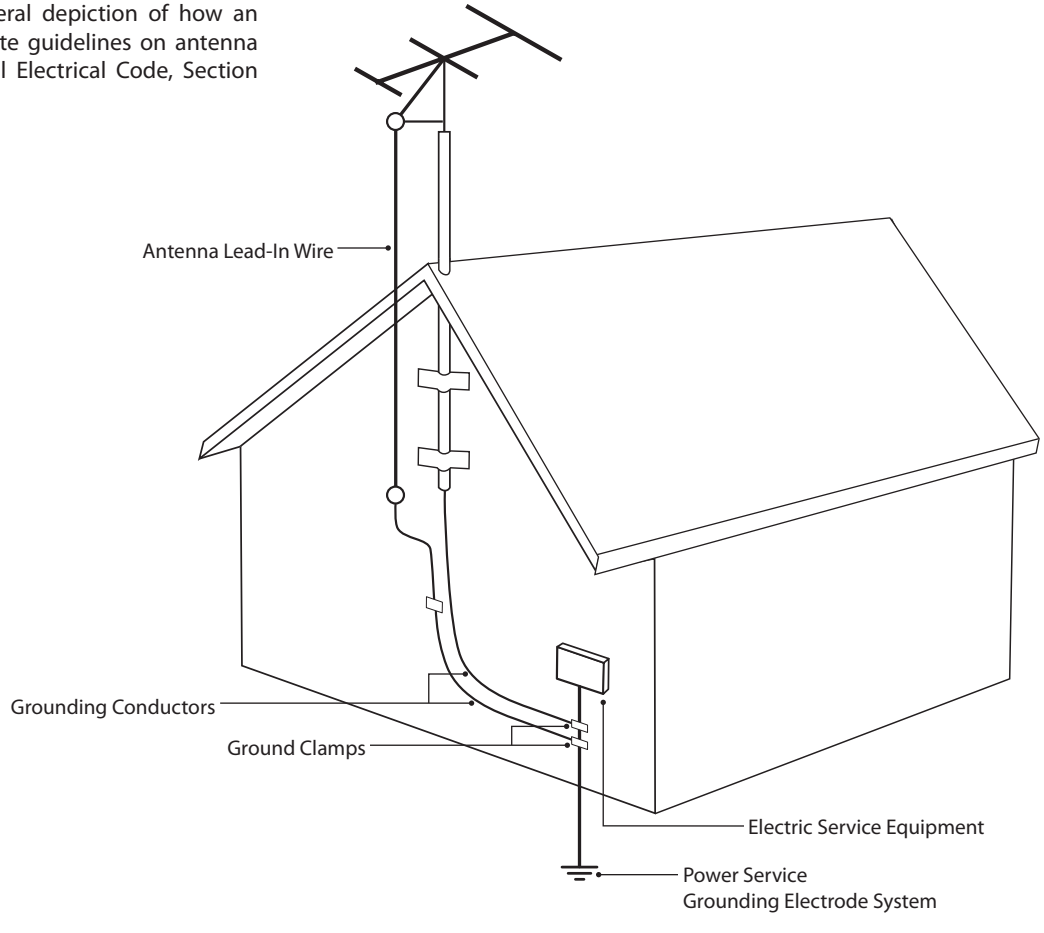
Conforms to UL60065
Certified to CAN/CSA IEC60065

### Precautions:

1. Power – WARNING: BEFORE TURNING ON THE POWER FOR THE FIRST TIME, READ THE FOLLOWING SECTION CAREFULLY.
2. Do Not Touch The Unit With Wet Hands – Do not handle the unit or power cord when your hands are wet or damp. If water or any other liquid enters the cabinet, unplug the unit from power immediately and take it to a qualified service person for inspection.
3. Location of Unit – Place the unit in a well-ventilated location. Take special care to provide plenty of ventilation on all sides of the unit especially when it is placed in an audio rack. If ventilation is blocked, the unit may overheat and malfunction. Do not expose the unit to direct sun light or heating units as the unit internal components temperature may rise and shorten the life of the components. Avoid damp and dusty places.
4. Care – From time to time you should wipe off the front and side panels of the cabinet with a soft cloth. Do not use rough material, thinners, alcohol or other chemical solvents or cloths since this may damage the finish or remove the panel lettering.

### *Grounding an Outdoor Antenna*

If the AM/FM tuner is used with an outdoor antenna, the antenna must be grounded against static charges and voltage surges. Consult the instructions that came with the antenna or contact the antenna manufacturer for proper installation instructions. The diagram gives a general depiction of how an outdoor antenna should be grounded. For complete guidelines on antenna grounding procedures, please consult the National Electrical Code, Section 810, ANSI/NFPA No. 70-1984.



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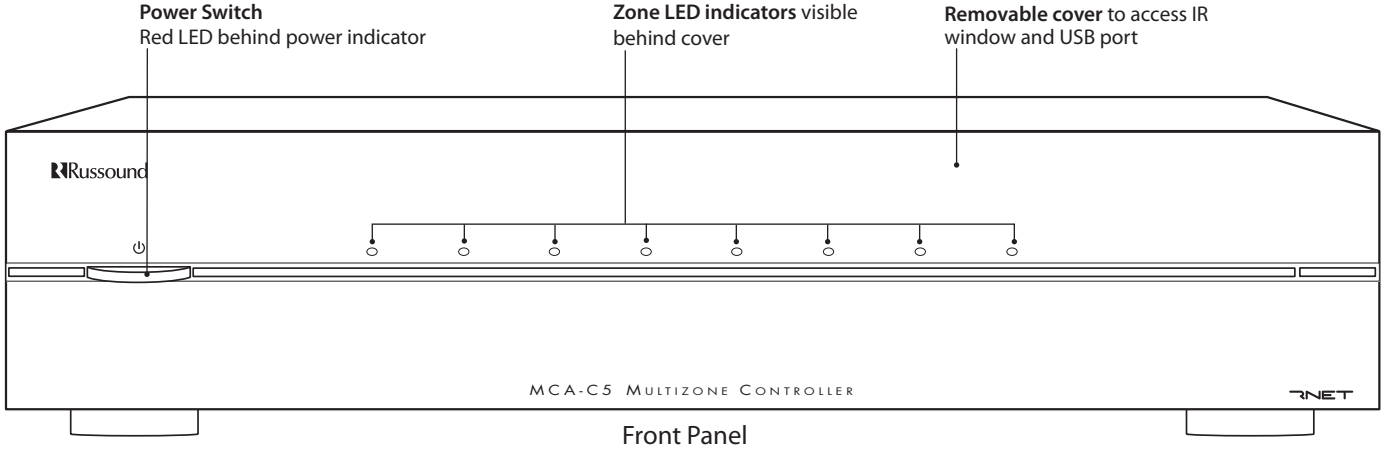
Thank you for choosing the Russound MCA-C5 multizone controller amplifier to enhance your home with multiroom audio.

The MCA-C5 caters to homeowners who want control over their multiroom audio systems with such capabilities as infrared (IR) tools to manage the system from anywhere in the house. Eight source inputs, simplified programming, and user adjustable sound controls make listening to music throughout the home easier than ever.

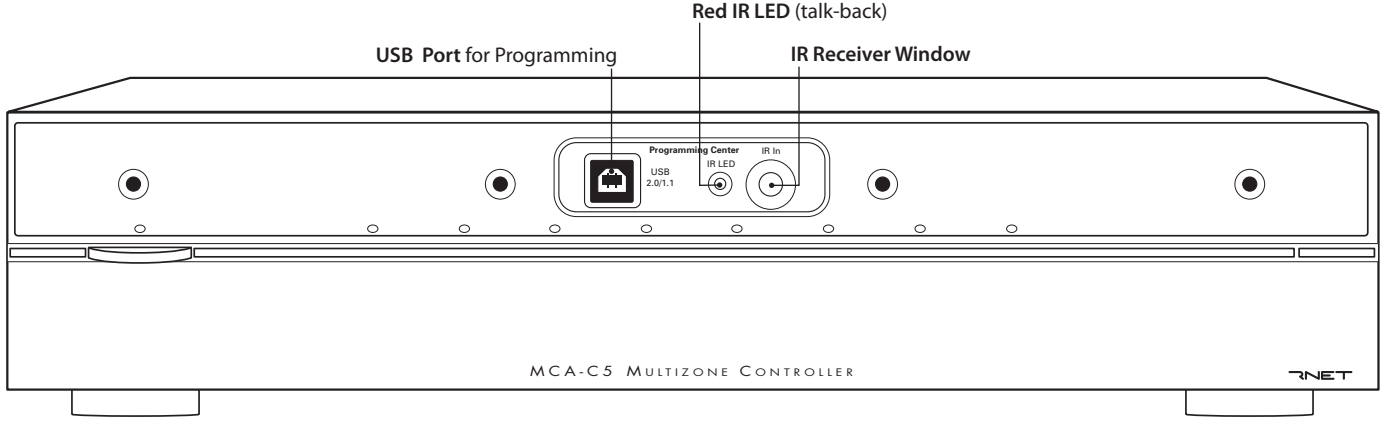
### Key features include:

- 8 sources delivered to up to 8 zones for sharing music throughout the home
- Scalable to 48 zones by connecting up to six controllers
- A remote control with simplified programming and control via intelligent IR learning capabilities for quick setup
- A built-in AM/FM tuner with RDS support
- Line level outputs for each zone
- Eight zone specific 12VDC trigger outputs
- Twelve channels of digital amplification rated at 40 watts per channel for zones 1-6
- Incorporates RNET smart sources, transmitting metadata (song, artist and other information) for display on the keypads
- Routed IR source control outputs for each source (1/7 and 2/8 share a output), and one common IR output
- Party mode, Do Not Disturb, and source / zone linking options
- Alarm clock and sleep timer
- Audio paging with adjustable audio signal sensing and a DC voltage trigger input
- Source power management with line level auto-sensing
- Front panel USB port for programming ease
- Rear panel RS232 port for integration with other systems
- Configuration software for PC programming
- Supported keypads are the MDK-C5 and the UNO-TS2

**Important Note:** SCS-C5 software is necessary to program the MCA-C5 system. It can be downloaded from the Document Center at www.russound.com.




Front Panel




Front Panel with cover removed

**Zone 12V Triggers**
12VDC 100ma outputs ready when corresponding zone is active

**Home Theater 12 VDC Trigger**
Activates source power management when sharing sources with home theater

**Controller ID Switch**
Set ID for multiple controller configurations or firmware updates

**Serial Interface**
Configurable RS232 port for firmware updates and communication

**Page 12VDC Trigger**
Accepts paging device input

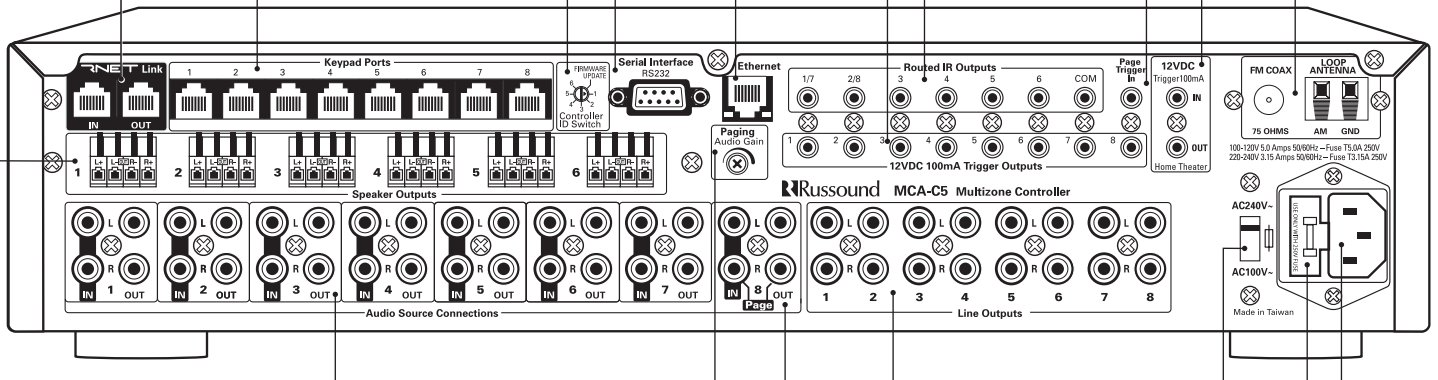
**RNET Link** - Links multiple controllers and RNET sources

**Keypad Ports** - RJ-45
Connections for zone keypads

**Ethernet Port**
For configuration over IP network

**IR Outputs**
6 routed, 1 common

**AM/FM Antenna**
Antenna connections for internal tuner




**Speaker Outputs** - Connect 4-8 Ohm speakers for each of the first six zones

**Audio Source Connections**
Signal sensing stereo line level inputs and loop outputs

**Line Level Outputs**
Can be set fixed or variable (with software) for each zone

**AC 120/240V Input**
Detachable grounded power cord connection

**Paging Audio Gain**
Adjusts sensitivity

**Page Audio In/Loop Out**
(optional Source 8)

**AC Voltage Switch**
Select appropriate voltage

**Fuse Holder**
Holds replaceable fuse for AC input connection

Rear Panel

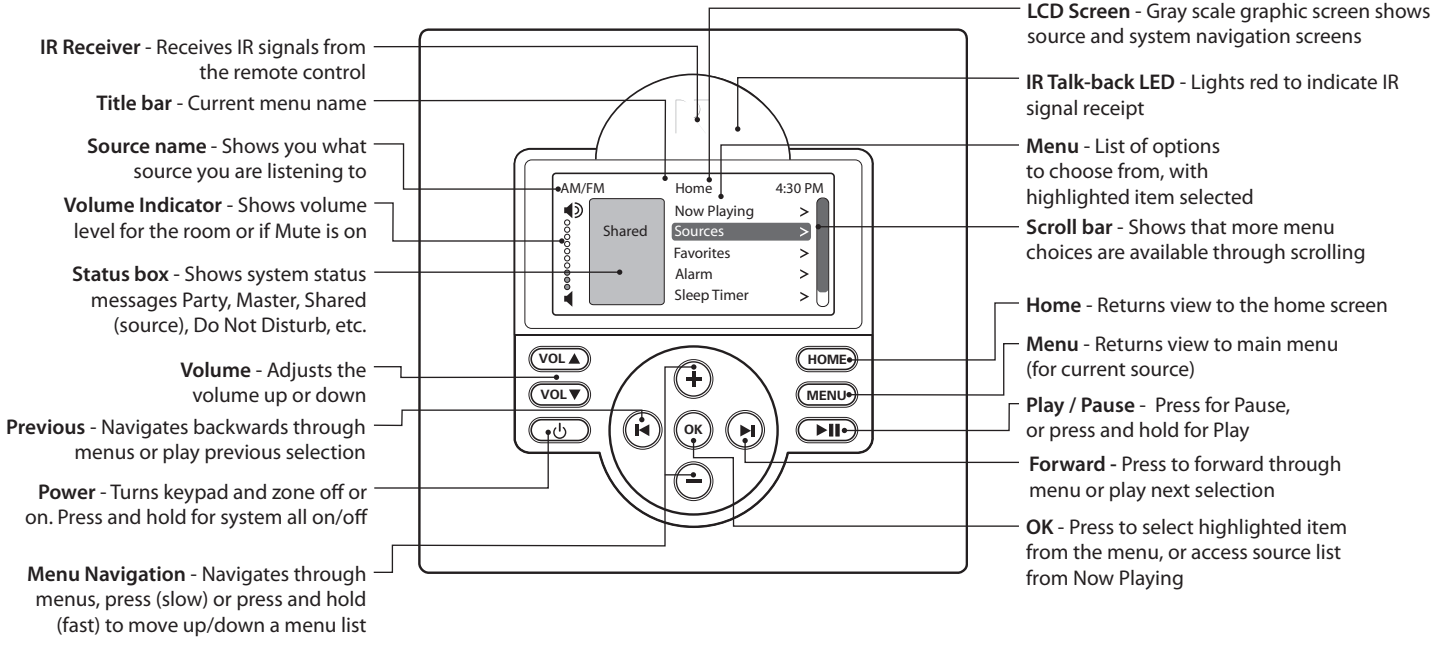
### *MDK-C5 Keypad*

The MDK-C5's buttons and menus allow the user to easily find and control music sources and to make changes to system settings and room audio levels.

Six backlit oblong buttons access power on/off, music play/pause, volume up/down, and menu shortcuts. The OK button in the center activates a menu choice and the navigation buttons allow you to move through menus and lists. All music sources, audio adjustments and system settings are arranged in menus and lists. The navigation buttons also act as source controls to select next / previous song etc. depending upon the type of source being controlled.

The keypad's home screen, buttons and navigation buttons are described below.

The main menu (Home) options include: Now Playing, Sources, Alarm, Sleep Timer, Party Mode, Do Not Disturb, and Settings. The Settings menu includes the audio, clock, display, and installer options. The audio settings include bass, treble, balance, loudness, and turn on volume.


**IR Receiver** - Receives IR signals from the remote control
**Title bar** - Current menu name
**Source name** - Shows you what source you are listening to
**Volume Indicator** - Shows volume level for the room or if Mute is on
**Status box** - Shows system status messages Party, Master, Shared (source), Do Not Disturb, etc.
**Volume** - Adjusts the volume up or down
**Previous** - Navigates backwards through menus or play previous selection
**Power** - Turns keypad and zone off or on. Press and hold for system all on/off
**Menu Navigation** - Navigates through menus, press (slow) or press and hold (fast) to move up/down a menu list
AM/FM
Home
4:30 PM
Shared
Now Playing
Sources
Favorites
Alarm
Sleep Timer
VOL ▲
VOL ▼
OK
HOME
MENU
**LCD Screen** - Gray scale graphic screen shows source and system navigation screens
**IR Talk-back LED** - Lights red to indicate IR signal receipt
**Menu** - List of options to choose from, with highlighted item selected
**Scroll bar** - Shows that more menu choices are available through scrolling
**Home** - Returns view to the home screen
**Menu** - Returns view to main menu (for current source)
**Play / Pause** - Press for Pause, or press and hold for Play
**Forward** - Press to forward through menu or play next selection
**OK** - Press to select highlighted item from the menu, or access source list from Now Playing

MDK-C5 Keypad Functions

### *Basic Operation*

**Turn on the zone** - Press the power button on the keypad or press power on the SRC-C5 remote control to turn on the zone and hear music. The zone will default to the last playing source before being turned off. Press and hold the power button (when ON) to turn on all the keypads.

**Turn off the zone** - Press the power button on the keypad or press the power button on the SRC-C5 remote control to turn off the keypad and music. Press and hold the power button (when OFF) to turn off all other keypads.

**Volume adjustments** - Press the Volume up/down buttons on the side of the keypad, or press the VOL +/- button on the SRC-C5 remote control.

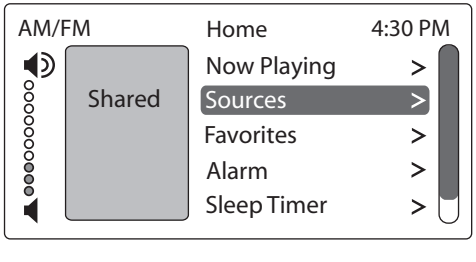
**Mute Audio** - Press the Mute button on the SRC-C5.

### *Main Menu - Sources*

From the home screen, select "Sources." A list of available audio sources appears. Select a source, or press a numbered "Source" button on the SRC-C5 remote control.

Once selected, choose music from that source. Each source has its own menu and screens. Main menus list what is available: channels, genres, playlists, songs, or artists.

Shared - When you see "Shared" on the screen, what you are listening to is also playing in another room. If you change the selection (song, channel, playlist) *on that source*, the change will also happen in the other "Shared" room.




### *Main Menu - Favorites*

**Favorites** - Save a source or a radio station/channel as a favorite.

**Add new** - Tune to the music source you want to save as a favorite. From the Favorites menu, select "Add New." Name the favorite using the +/- buttons to move through the alphabet and the forward button to move to the next character. Press the OK button to save.

**Edit name** - Choose the favorite to rename and use the +/- buttons to scroll through the alphabet and the forward button to move to the next character.

**Delete favorite** - Choose the favorite to be deleted, press the OK button to delete.

### *Main Menu - Alarm*

Set the keypad as an alarm clock and wake up to music. From the home screen menu, scroll to and select "Alarm" for the following options:

**Alarm on/off** - Activates alarm on or off. If an alarm is set a clock icon will appear on the keypad display.

**Wake time** - Set the time for the alarm to go off.

**Wake to** - Choose the music source to wake to.

**Choose days** - Set the alarm to go off on weekdays, all days or just once.

**Set snooze** - Choose the interval (5 to 30 minutes) before the alarm goes off again.

**Alarm level** - Set the volume of the alarm.

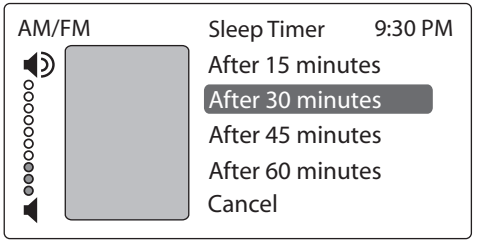
***How to:***

**Turn off active alarm** - Press the power button on the keypad or SRC-C5 remote control.

**Snooze** - Press the pause button on the keypad or the SRC-C5 remote control.

### *Main Menu - Sleep Timer*

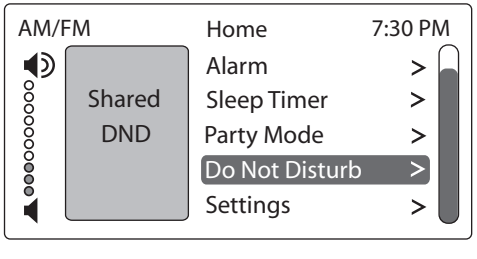
You can set the timer so the zone turns off in one of the following increments: 15, 30, 45, or 60 minutes.




### *Main Menu - Set Party Mode or Do Not Disturb*

**Party and Master** - The keypad that shows Master has started a "party" and keypads that show Party are "attending." All rooms are listening to the same music, and only the Master can change the music. Volume control remains independent.

**Do Not Disturb** - Someone in another room has chosen a source and locked out anyone else from changing it. That room also won't be disturbed by paging or a doorbell chime.




### *Main Menu - Settings*

**Audio** - From the home screen, scroll to and select "settings," and choose "audio settings." You'll see items to adjust, such as bass, treble and balance. Each selection has its own screen and shows levels for real-time adjustments.

**Clock**

**Set Time -** From the Clock menu, select "Set Time." Press the +/- buttons to move through numbers. Press the |< or >| buttons to move the cursor and press OK to save.

**Set Date** - From the Clock menu, select "Set Date." The date format is month/day/year. Press the +/- buttons to move through numbers. Press the |< or >| buttons to move the cursor, and press OK to save.

**Clock Format** - From the home menu, select "Settings," then "Clock." Choose "Clock Format," and select 12 hour (AM/PM) or 24 hour (1200) format.

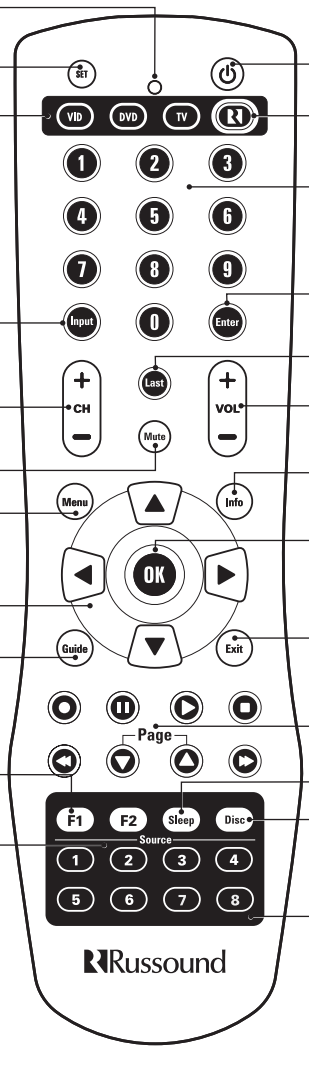
**Display -** Set the contrast and brightness for the keypad display. Use the buttons to move the cursor to the desired level.

**Installer Options**

**Diagnostics (Version) -** This screen displays firmware versions for the controller and the keypad, and the keypad's bootloader version.

**IR Enable/Disable -** The default is Enabled. If an external IR receiver is used, the keypad IR receiver should be disabled. From the main menu, select "Settings," then "Installation," then IR Enable/Disable. Select "disable" and exit back to the menu.

**Network Settings -** This screen displays an IP and MAC address for the MCA-C5 when the controller is connected to a network via the Ethernet port on the back of the unit (for configuration). This screen also provides diagnostic messages when IP assignment is incomplete. From the Home screen, choose "Settings", then "Installation." From the Installation menu, choose "Network Settings" to see the controller's IP address and MAC address.




**LED** - IR Indicator.

**Set** - Program sequences

**VID / DVD / TV -** Use these keys to select a local device.

**Input -** Switch the TV's, VCR's, SAT's or DVD's input to view TV or video programs. Without a local device selected, toggles through sources on keypad.

**Channel -** Change channels sequentially - up or down.

**Mute -** Press to turn the sound off or on in the zone.

**Menu -** Display the menu for the selected device.

**Cursor Keys -** Move the cursor in the menu screens.

**Guide -** Display the program guide for the selected device.

**Programmable Favorites** - Select and save favorite source or music. Press and hold to save. Press to recall.

**Source Keys -** Use these keys to select specific sources on the keypad and to set which source the remote will control.

**Power -** Turn the selected source on or off.

**Russound Zone Control** - Activates control of Russound system controller and keypads, and its connected sources.

**Numeric Keys -** Directly enter channels (e.g. 09 or 31).

**Enter -** Press to choose the highlighted menu option. May perform "OK" function for devices.

**Last -** Press to recall the last-viewed channel.

**Volume -** Raise or lower the sound level of the zone being controlled.

**Info -** View the current channel and program information.

**OK -** Press to choose the highlighted menu option. May perform "Enter" function for devices.

**Exit -** Exit the selected device's menu, guide, or program without making a menu selection.

**Control Keys -** Skip backward, rewind, fast forward, skip forward, record, stop, pause, or play tracks on source device.

**Sleep Timer -** Access the sleep timer function on the keypad.

**Disc -** Direct disc selection on the appropriate device.

**Overlays -** There are several optional source button overlays included. Review the source configuration and match the system programing and source placement to the chosen overlay (if used). Peel the backing from the rear of the overlay and fit it over the source button block on the SRC-C5 remote.

### *Ventilation Requirements*

**Important:** The MCA-C5 should be situated so that its location or position does not interfere with its proper ventilation. Do not block vents above or to the sides of the unit, as it requires ventilation for proper operation. Do not expose to excessive dust, and do not allow dust to build up on the unit and block vent holes. Do not place the MCA-C5 above or below a heat-generating component such as an audio amplifier.

Be sure to leave at least 2 inches of space to the sides of the unit with open air flow above. A single-space rack mount vent or about 1.75 inches must be kept clear above and below the unit.

### *Installation*

The MCA-C5 controller can be rack mounted or placed on a shelf in an equipment rack. The controller will occupy two rack spaces with the feet removed.

The controller can be installed in an equipment rack using the included rack-mount ears and hardware to attach the ears to the controller chassis.

Up to six controllers may be connected and allow up to 48 zones on the system.

### *Electrical Power*

The MCA-C5 operates at 100-120VAC ~60 Hz or 220-240VAC ~50 Hz. Voltage is selected by the voltage switch on the rear panel and incorporates the appropriate detachable power cord. It is recommended that the MCA-C5 and the source equipment be plugged into a dedicated 20-amp circuit. A power line conditioner can reduce interference problems caused by noise found in some electrical systems.

The power switch for the unit is on the front panel.

Do not connect the controller's main power feed until all other connections have been made and verified. Live connection or removal of the keypad wiring or other wiring when the system is powered can cause communication problems in the network. Double-check terminations during each phase of the installation to prevent accidental damage. Incorrect wiring is the number one cause for non-warranty product damage.

### *Important Considerations*

- Disconnect the power cord before making any connections to the controller.
- Verify that all connections and polarity are correct.
- Keep all power cords away from all signal cables to prevent humming from induced noise.
- Choose reliable signal cables and patch cords.
- Label all wires with the room location at both ends of the wire.
- Avoid running speaker wires or signal cables close to house electrical wiring for any distance. If you have to run them parallel, make sure to space the wires at least two feet from the AC line. If you need to cross an AC line it should be at a 90° angle.
- For multiple controllers, the controller ID must be set with the rotary switch on the rear panel. Each controller must be set to a unique number before powering connected controllers.

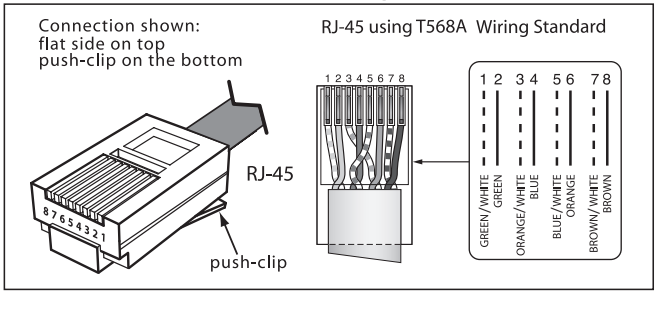
**Important:** The necessary software (SCS-C5) to program and configure the system is available via download from the doc center at www.russound.com. With your laptop, you can configure the system and name all of the zones prior to connecting with the MCA-C5 controller. See Section on page 27 for items to be programmed with the software.

### *Wiring*

Route CAT-5e cable between the keypad locations and the controller. Terminate all CAT-5e cables with an RJ-45 connector using the T568A wiring standard configuration. Utilize a UL/CSA approved electrical box at the keypad (double-gang at least 32 cu. in.) and controller locations. Using connector specific wall plates at the controller location will better organize all of the incoming cables. Route CAT-5e wire from the electrical box to each keypad location. Label the wires at both ends with the zone and location.

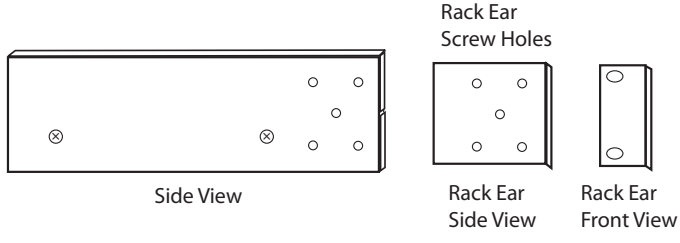
Route standard 4 conductor speaker wire to each speaker location. Each speaker connection requires a 4-8 ohm load and will provide 40 watts per channel. Standard 16-gauge 4-conductor stranded speaker wire can be run up to 125 feet; 14-gauge wire can be run up to 250 feet.

**RJ-45 CAT-5 Wiring Scheme**

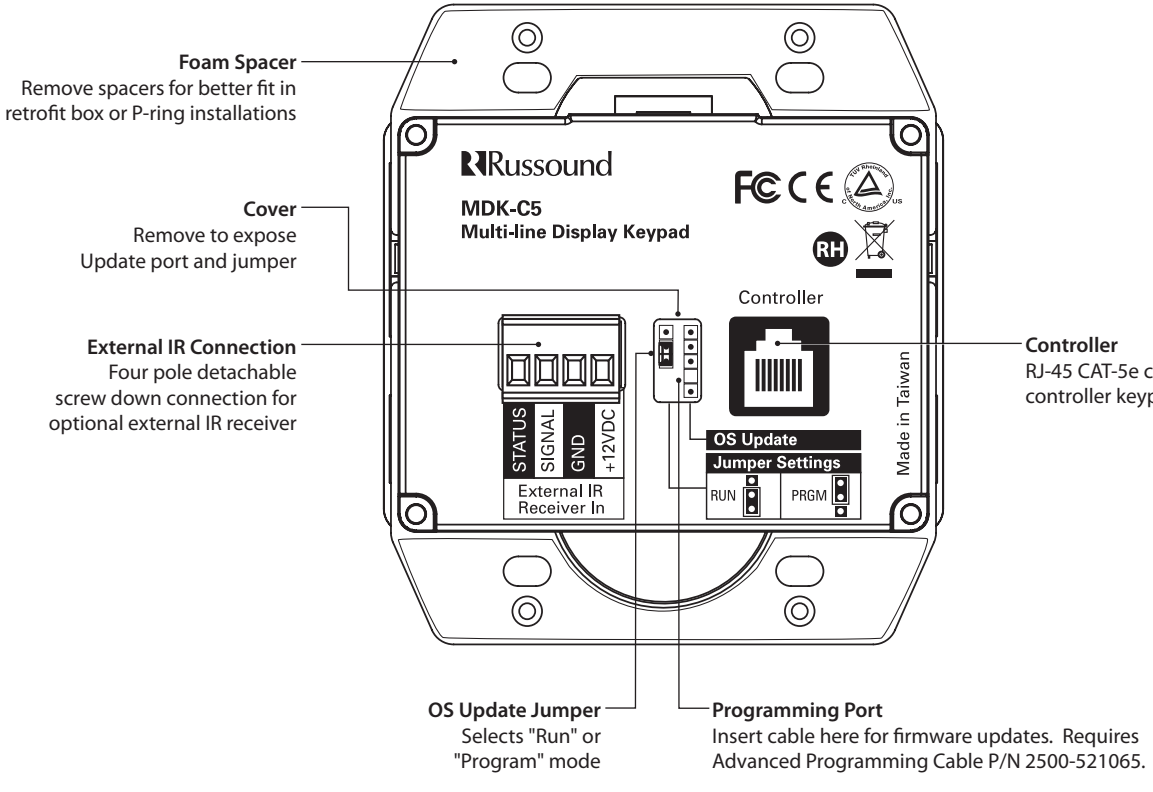



### *Rack Mount Installation*

To attach the rack ears, locate the five rack mount holes on each side of the controller's chassis. Align the holes in the rack ears with the holes in the chassis. Insert and tighten the screws.



**CAUTION**
Mounting screws must be hand-tightened. Over-tightening the mounting screws can cause the buttons to jam and malfunction.



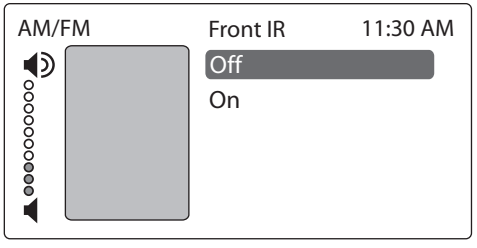

MDK-C5 Keypad (rear)

### *External IR Connection to MDK-C5 Keypad*

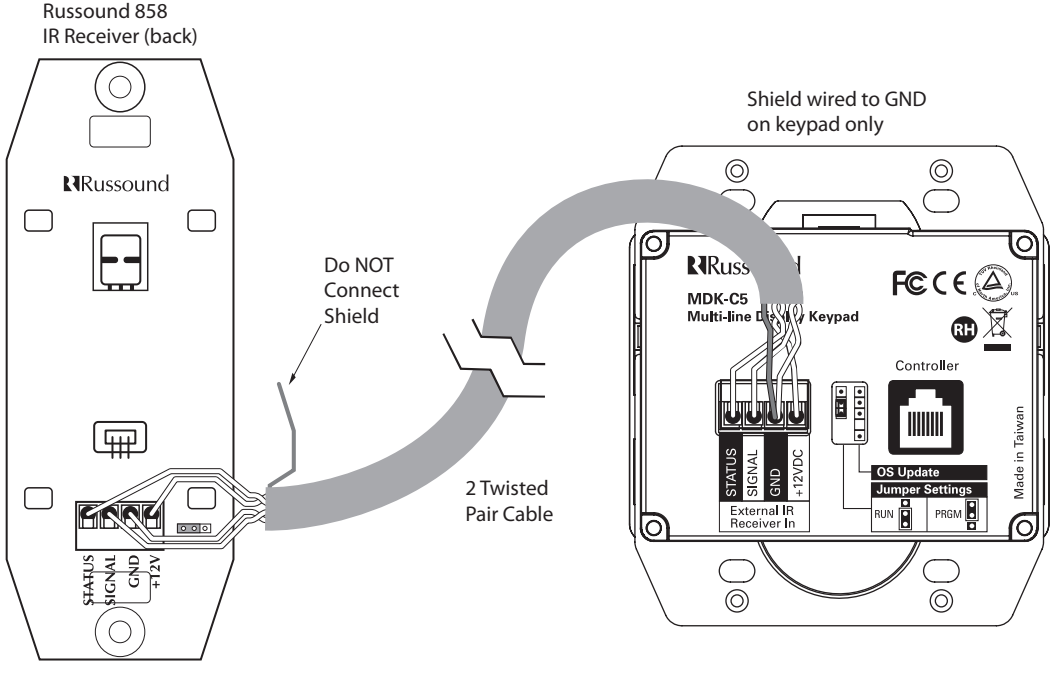
The MDK-C5 keypad has an External IR Receiver In terminal for connecting an external IR Receiver such as the Russound 858, SaphIR 862 Eye, or SaphIR 860 Phantom.

Use 2 twisted pair wire with one pair connecting GND (GROUND) and IR (SIGNAL) and the other pair connecting ST (STATUS) and V+ (+12VDC). Do not connect the shield to the IR receiver terminals.

If utilizing an external IR receiver, then you must disable the IR receiver in the keypad. This is disabled in the installer options menu on the keypad. See screen at right.




Disable Keypad IR




Connection of External IR to Keypad

## KEYPAD COLOR PLATE CONVERSION

### *MDK-C5 Color Plate Conversion*

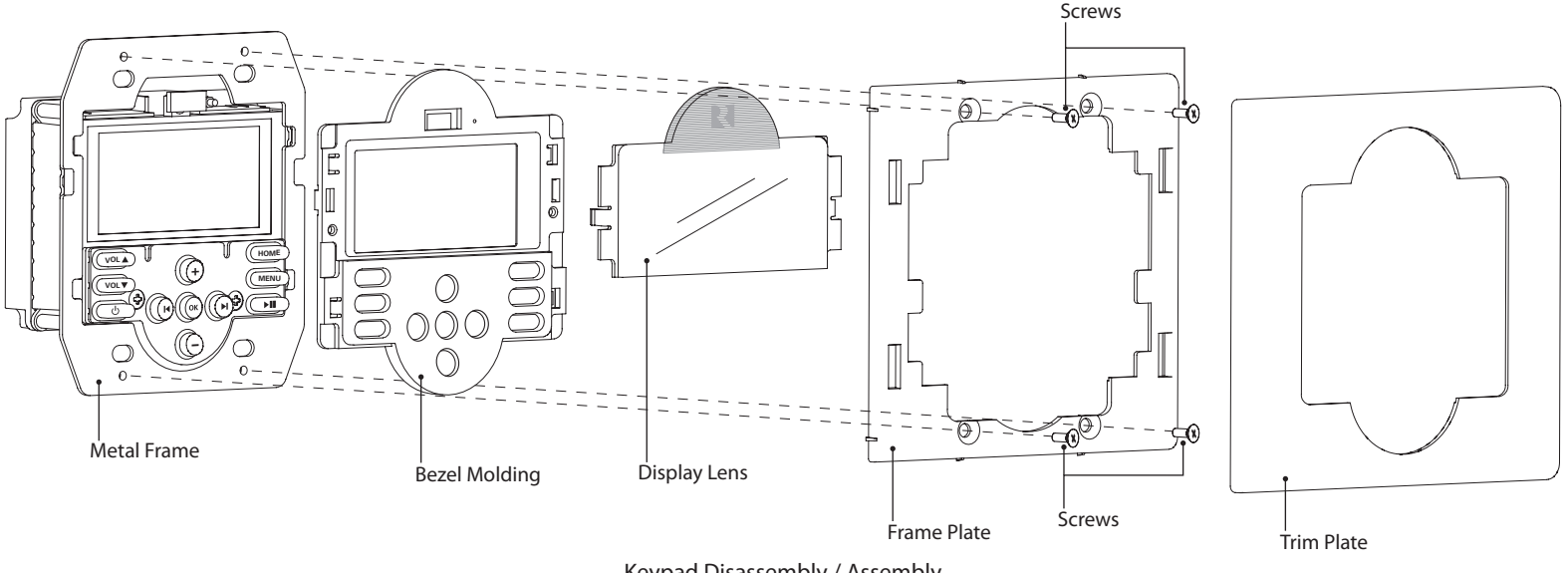
You will need both small straight and Phillips head screwdrivers to change the color plates on the keypad. The Bezel Molding and the Trim Plate will be switched for the new color plates.

1. If installed, remove the MDK-C5 keypad from the wall. Gently pull the Trim Plate off the mounting plate. Unscrew the unit from the electrical box, and disconnect the cable.
2. Unscrew the plastic Frame Plate. Keep the Frame Plate and screws for reattachment later.
3. Remove the Display Lens from the Bezel Molding by providing inward pressure to the two locking tabs while simultaneously pushing it away from the Bezel Molding.
4. Once the Display Lens is removed, put aside for reattachment later. Be careful to not damage the display.
5. Remove the Bezel Molding by gently pressing in each of the 4 locking tabs (2 per side) while pushing it away from the metal frame. CAUTION: To avoid damage to the LCD panel, do not use hard edged tools.
6. Reverse the order for installation, taking the following precautions.

   a. Make sure the button key mat is positioned properly on the front circuit board and without dust or debris on the button contact points prior to attaching the Bezel Molding.

   b. Make sure that there isn't any debris or fingerprints on either the display or back of the Display Lens prior to reattachment.

   c. Use a clean, dry, lint-free soft cloth to gently wipe the display or back of the Display Lens to clean if necessary. Never use cleaning agents as this can cause streaking or permanent damage to either part.




Keypad Disassembly / Assembly

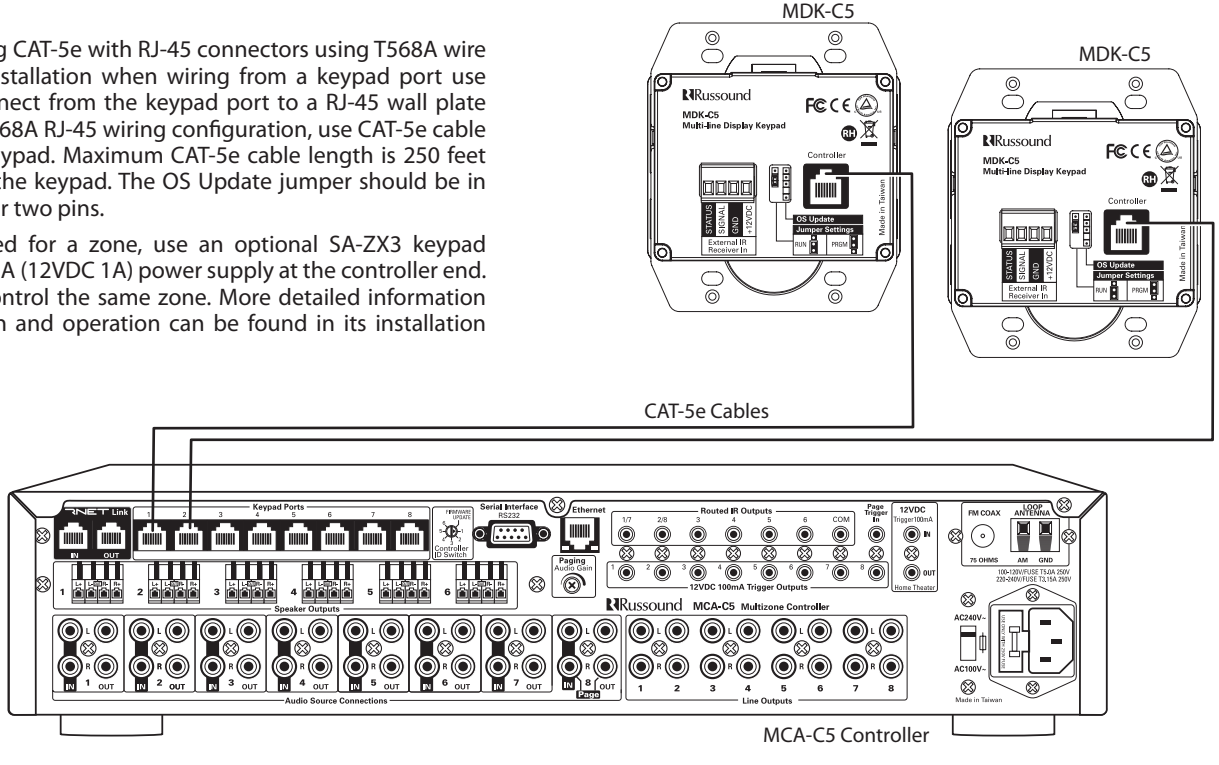
### *Controller / Keypad Connection*

The MDK-C5 keypad is designed for use with the C-Series controllers, and connects to a keypad port near the top left on the rear of the controller. These RJ-45 ports support MDK-C5 keypads (and up to eight UNO-TS2 touchscreens per controller).

The eight keypad ports correspond to the eight zones supported by the MCA-C5. When a connected keypad is powered on, the zone becomes active and the corresponding zone LED lights up on the front of the MCA-C5 controller.

Connections are made using CAT-5e with RJ-45 connectors using T568A wire configuration. For a clean installation when wiring from a keypad port use a CAT-5e patch cable to connect from the keypad port to a RJ-45 wall plate (optional). Using the same T568A RJ-45 wiring configuration, use CAT-5e cable from the wall plate to the keypad. Maximum CAT-5e cable length is 250 feet between the controller and the keypad. The OS Update jumper should be in the RUN position on the lower two pins.

If more keypads are desired for a zone, use an optional SA-ZX3 keypad splitter with a Russound 1201A (12VDC 1A) power supply at the controller end. All keypads on an SA-ZX3 control the same zone. More detailed information regarding SA-ZX3 installation and operation can be found in its installation manual.




Keypad connection to the MCA-C5

### *Speaker Output Connections*

**CAUTION:** Do not connect L- and R- together. Use four-conductor cable and wire each ground individually. Do not use a common ground. Shorting between terminals will cause damage to the digital amplifier.

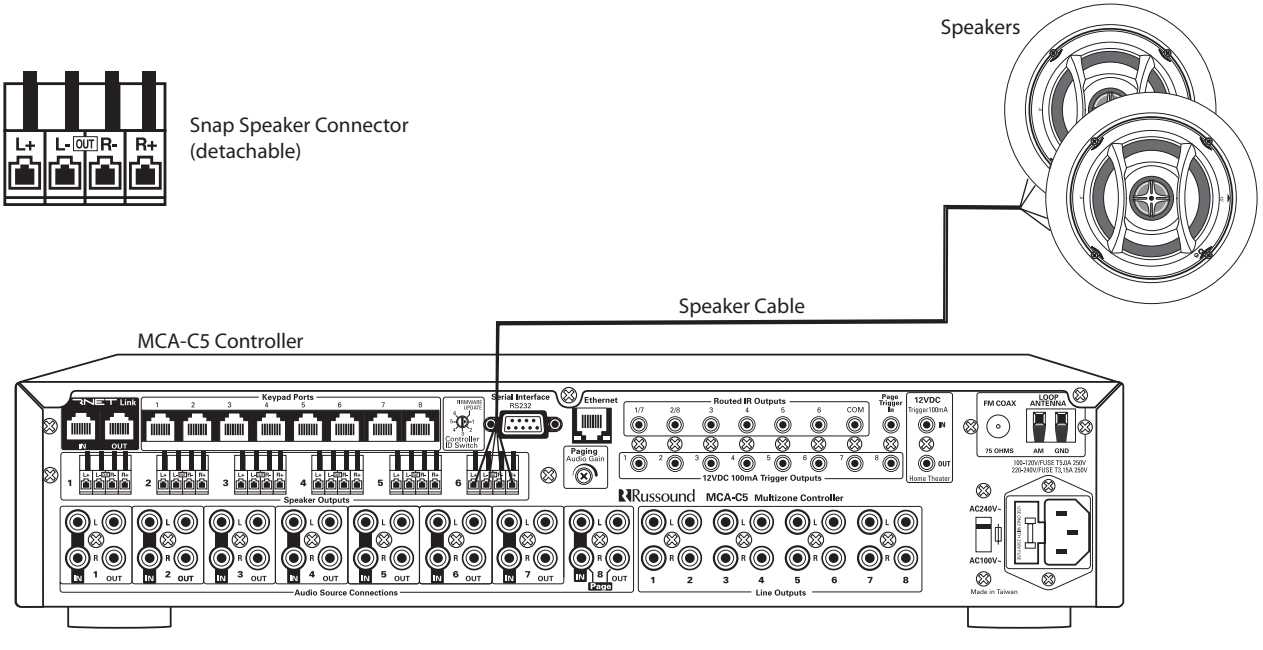
The MCA-C5 supports speaker outputs for zones 1 through 6. These 40 watt per channel stereo speaker level outputs have high-current two-channel digital amplifiers. Each speaker connection requires a 4 to 8-ohm load.

The speakers are connected to the MCA-C5 using the supplied modular snap speaker connectors. Each of these color coded connectors is designated for the speaker set of a particular amplified zone. To avoid confusion, connect one zone speaker set at a time starting with Zone 1, taking care to keep zone and speaker wire identities straight.

Strip 1 to 2 inches (2.5 to 5 cm) off the end of each speaker cable jacket. Then strip ¼ inch (0.7 cm) of insulation off each wire. Twist the speaker wire strands together so there are no strands separated from the bundle.

Lift the black lever for each connection until it locks open and insert the proper speaker wire, matching channel and polarity for all four wires. Snap the lever down. Check to make sure there are no stray strands of wire outside the terminals. If there are, remove the wire, twist the strands together, and reconnect the wire to the terminal. Insert the modular connector into its designated output on the back of the MCA-C5.

All 8 zones have RCA line outs. For audio output to zones 7 and 8, use that option. These are set as fixed or variable output through SCS-C5 software.




Speaker Output Connections

### *RNET Source Data Connections*

The RNET Link In and Link Out can be used to connect the MCA-C5 to other specified Russound RNET-enabled source equipment. The connection is made using a CAT-5e patch cable from the Link Out of the controller and into the Link In of the RNET-enabled source. Another CAT-5e patch cable can be used to link out of that source and link into another RNET-enabled source in the system. Use a standard CAT-5e patch cable with an RJ-45 connector on each end.

Along with RNET data signals, the RNET Link In and Link Out port passes source IR signals. To avoid potential cross-talk between the source-specific IR repeating signal lines, the cable can not exceed 18 inches in length.

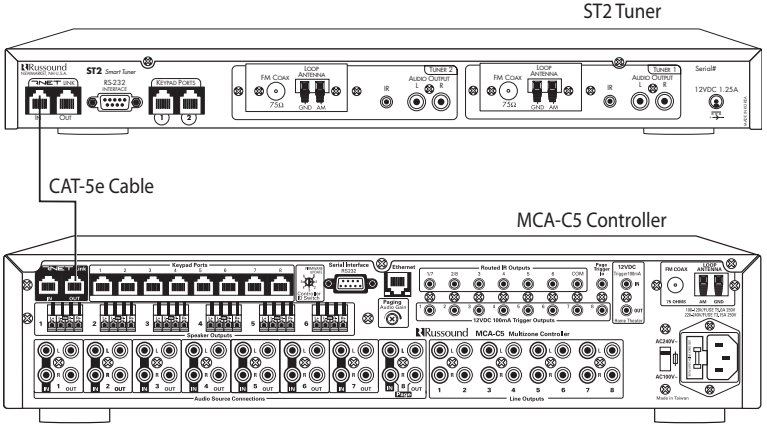
### *Source Audio Connections*

On the MCA-C5, sources 1 through 8 have standard stereo audio inputs and loop outputs. All source inputs have audio signal sensing. These sources can be programmed during zone setup to be global sources, or zones can be individually programmed to restrict access to sources.

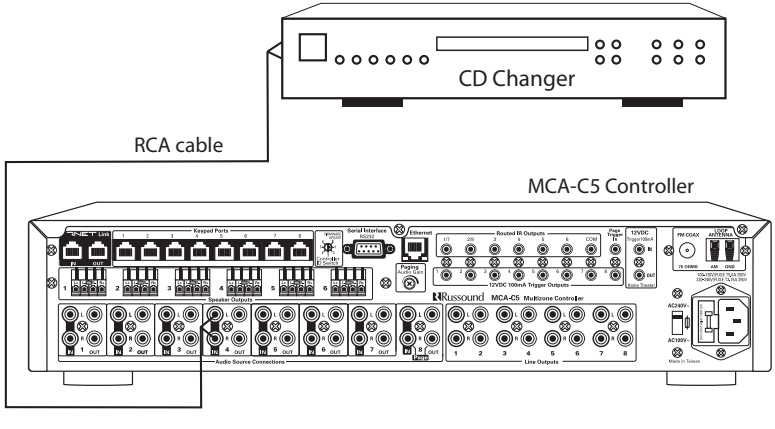
There is an internal AM/FM tuner that, if enabled, will occupy source 1. The tuner is enabled with the SCS-C5 software. If utilizing the internal tuner, do not connect/configure another source on source 1.

Connect each source output using quality RCA signal cables. Connect the Left and Right Audio outputs from each source to the corresponding inputs on the MCA-C5 controller.

The buffered loop-through outputs are used to loop to additional controllers or other AV switching systems (e.g., home theater receiver).




RNET Source Connection to MCA-C5




Audio Source Connection to MCA-C5

## *IR Connections*

### Routed IR Outputs

These six routed IR emitter outputs are supported by the MCA-C5 IR engine and support IR pass-through. They are also carried by the RNET Link cable to additional controllers.

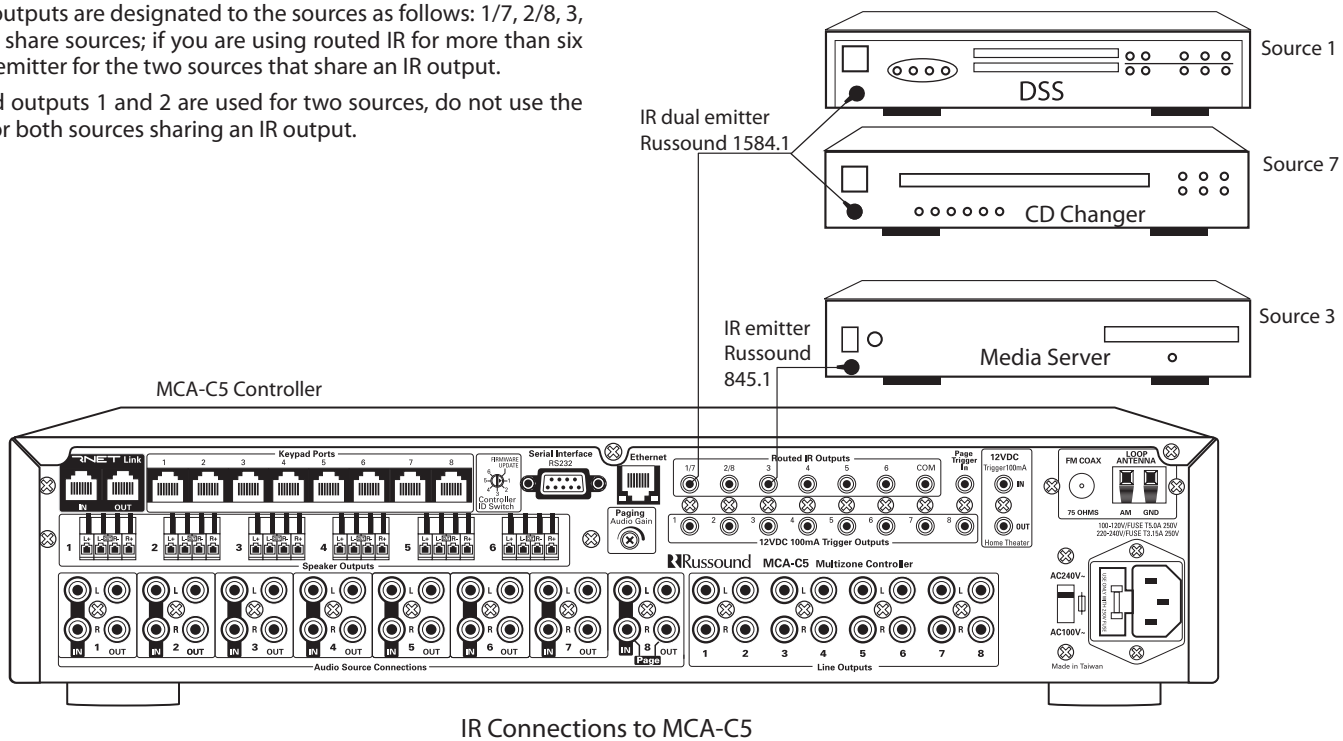
Attach the end of the IR emitter with the 3.5mm plug to the IR emitter port. Remove the adhesive back at the other end of the emitter and attach the emitter over the source component's IR window. When using the IR routed outputs, in order to control this source component with IR, the source must be selected at the keypad receiving the command.

The six IR routed outputs are designated to the sources as follows: 1/7, 2/8, 3, 4, 5, 6. Two outputs share sources; if you are using routed IR for more than six sources, use a dual emitter for the two sources that share an IR output.

**Note**: Since routed outputs 1 and 2 are used for two sources, do not use the same source type for both sources sharing an IR output.

### Common IR

This output is supported by the MCA-C5 IR engine and supports IR pass-through from any of the IR sources or zones. These allow control of any source equipment without that source being selected on the keypad. The connection for the common IR output is made using an IR emitter with a 3.5mm plug. The Russound 845.1 single IR emitter is recommended, or use an IR connecting block such as the Russound 857 which allows multiple units to be controlled through a common IR output.

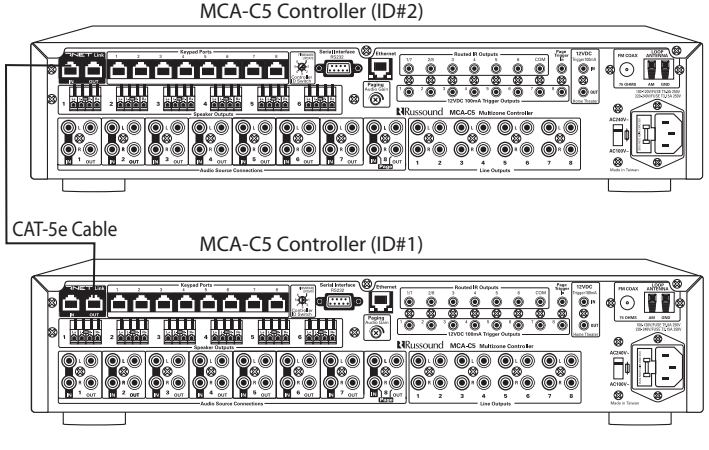



IR Connections to MCA-C5

### *Linking Multiple Controllers*

The RNET Link In and Link Out can be used to connect two or more (up to 6) MCA-C5 controllers (does not support CAV6.6, CAM6.6 or CAA66 controllers). The connection is made using a CAT-5e patch cable from the Link Out of the first controller and into the Link In of the next controller. Along with RNET data signals, the RNET Link In and Link Out port passes source IR signals.

The CAT-5e patch cable must have an RJ-45 connector on each end with T568A wiring configuration. It can not exceed 18 inches (45.7 cm) in length to avoid potential cross-talk between the source-specific IR repeating signal lines.

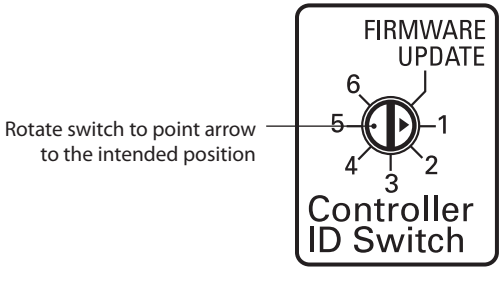



Linked Controllers

### *Controller ID Switch Settings*

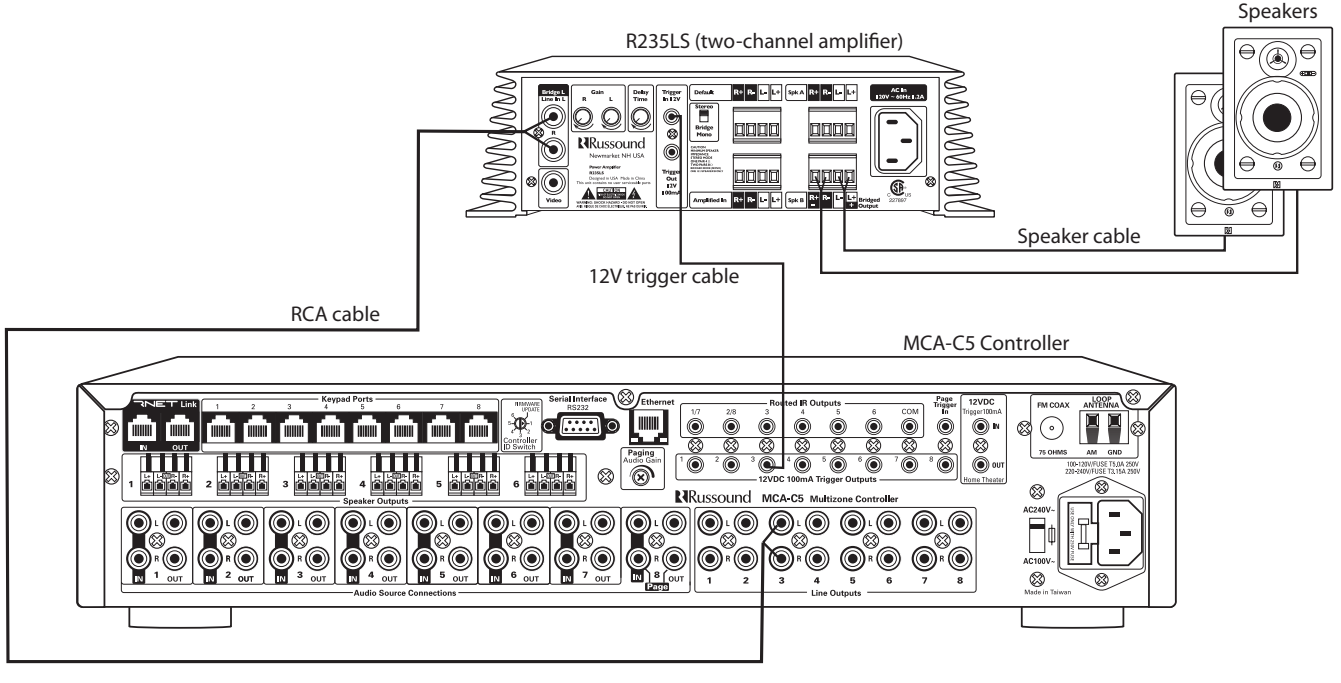
The Controller ID switch is a rotary switch with seven positions. It is used to set the controller ID number for multi-controller systems, and to put the MCA-C5 into Firmware Update mode.

If two or more MCA-C5 controllers are connected using the RNET Link In and Link Out ports, each controller must have a unique controller ID prior to being connected through the RNET ports. Set each controller's ID switch to a unique number. Any multi-controller configuration requires that one controller be set to controller ID #1. This action must be performed before the system setup procedure is completed through SCS-C5 software and before powering up the system. The small arrow on the dial should point at the desired setting.



### *Zone 12VDC Trigger Outputs*

There are eight zone 12VDC Triggers which are located under the routed IR outputs. The 3.5mm mini port provides 12VDC 100mA when the corresponding zone is turned on and is disengaged when the zone is turned off. The trigger can be used to engage any 12VDC trigger device or component that does not exceed 100mA, such as the Russound R235LS amplifier. The connections for the trigger outputs are made using a two-conductor cable with 3.5mm male mini-plug ports at each end. The tip is positive (+) and sleeve is negative (-).

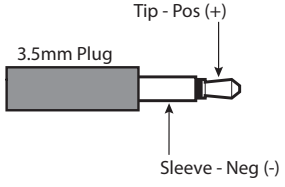



Typical Amplifier Connection

### *Page Trigger IN*

The page trigger can be used to trigger a page event. The 12VDC trigger input overrides signal sensing and selects the audio input from Source 8 (if included in page event) and sends it to any zone that does not have page disabled or that is not in Do Not Disturb mode. Do not use the page trigger input if there is a regular audio source connected to Source 8.

**Note:** The diagram at right shows an optional cable to the 12VDC trigger in from the phone system - this will initiate the page in the event that the volume or signal is too low initially to activate the line level input.



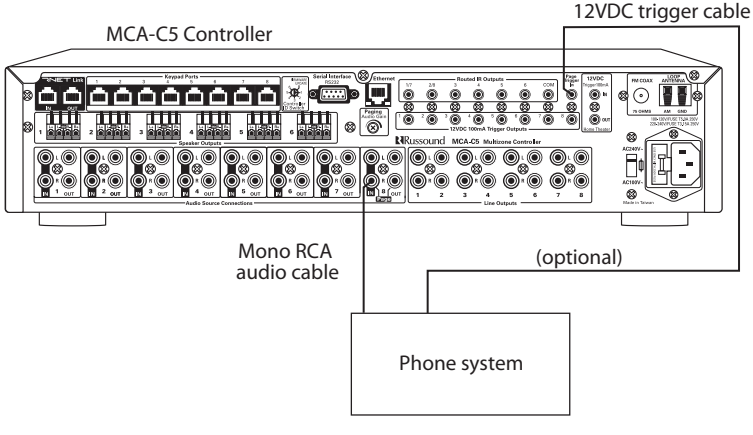

Polarity of 3.5mm Plug

### *Paging Audio IN/OUT*

The MCA-C5 has a paging audio input and loop output on Source 8 (right channel only) that accepts line level audio signals via RCA cables. The paging inputs interface with the page output of a telephone system or other peripheral device. When a page event is triggered, it interrupts audio outputs for all enabled zones. System paging can be disabled permanently in each zone by software programming or temporarily with Do Not Disturb. To utilize Source 8 for paging input, it must be configured as a page source in the SCS-C5 set up.

**Note:** If Source 8 is enabled for paging events then only seven source inputs are available.

The audio input has signal sensing for the paging circuit which will indicate when an audio signal is present. There is a gain control knob above this input for setting page input sensitivity.




Typical Paging Configuration
(if using source 8 for paging events)

### *Home Theater Triggers*

These triggers are used to integrate with home theater systems that can provide a 12 volt trigger. The MCA-C5 can be used to power manage sources that are being shared with the home theater system. For example, the power management system will check to see the state of the home theater before powering down source gear. Refer to the sample configuration diagram on the next page for connections.

**IN**

This 12VDC Trigger input will have different functionality based on the state of the system and the state of the trigger. The connections for the trigger are made using a two-conductor cable with 3.5mm male mini-plug. The tip is positive (+) and the sleeve is negative (-).

"System Off' (all zones have been off for at least 5 minutes): If 12VDC is applied to this input, it will activate the power management ON command to the sources. While all zones are still OFF and 12VDC is removed, the system will wait 5 minutes and then activate the power management OFF command to the sources.

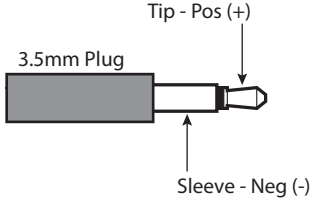
"System On" (at least one zone is on): If 12VDC is present but all zones get turned OFF, the power management OFF commands will not be sent until 5 minutes after the 12VDC is removed from the trigger.

**Note:** If the trigger is not being used, power management will operate normally.

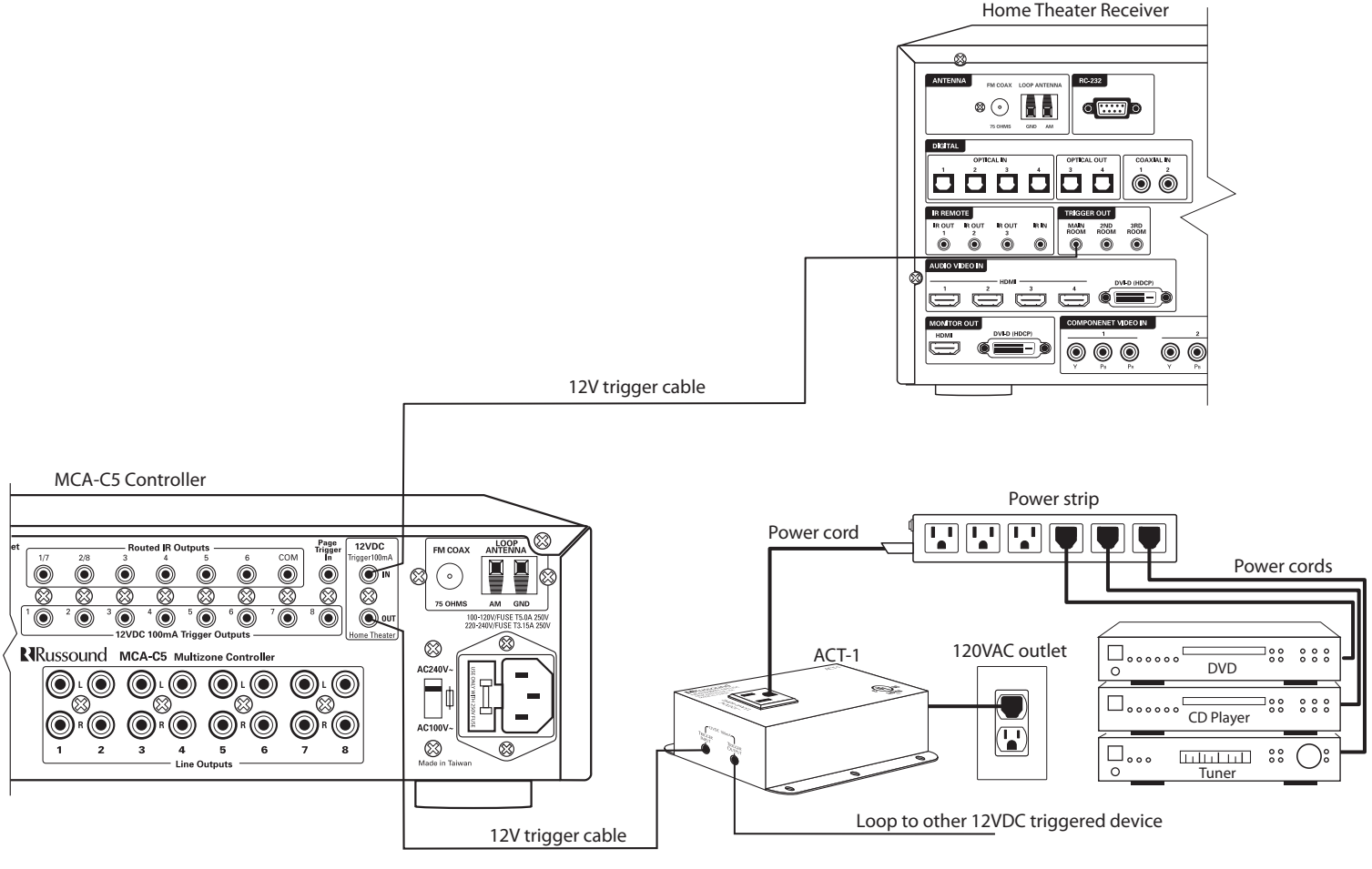
**OUT**

The 12VDC 100mA trigger out can be used to engage any 12VDC trigger device or component such as the Russound ACT-1 triggered outlet. The connections for the trigger out are made using a two-conductor cable with 3.5mm male mini-plug ports at each end. The tip is positive (+) and the sleeve is negative (-).

The output will be activated when the first zone is turned on (system on) and is deactivated six minutes after the last zone is turned off (system off), unless the home trigger input has 12VDC present.



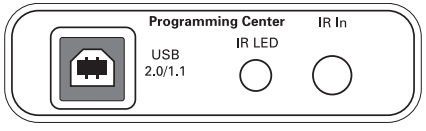

Polarity of 3.5mm Plug




Sample Configuration - Home Theater Trigger

### *USB Port*

The MCA-C5 has a USB 2.0/1.1 port on the front panel for ease of controller programming with SCS-C5 software.




### *RS232 Serial Interface*

The RS232 serial port is located on the back of the MCA-C5 and uses a DB-9 cable connection. The controller supports RS232 communication with various third-party automation systems. This port is also used for firmware updates. Firmware update protocol is available on the Document Center at www.russound.com.

The RS232 port supports RNET, RIO and19.2, 38.4, 57.6 and 115.2 kHz baud rates, which are set using SCS-C5 configuration software.

### *RS232 COM Port Settings (Controller 1 only)*

***RNET*** - The RS232 COM port provides bidirectional communication for control, by default supporting RNET protocol at 19.2 kHz Baud.

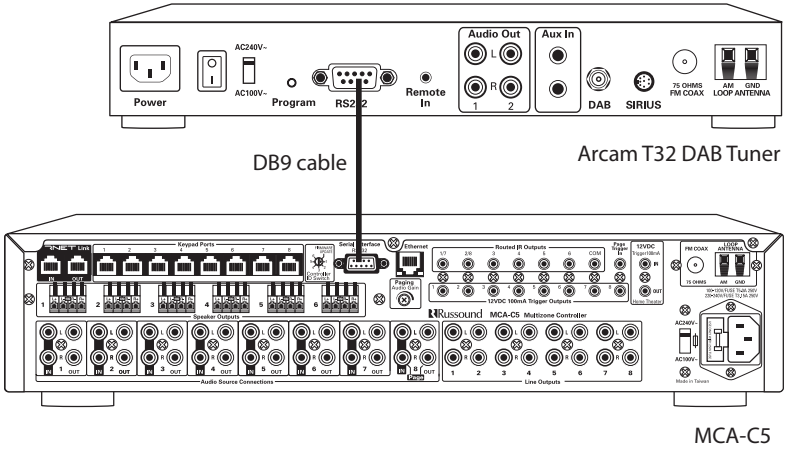
***RIO*** - RIO stands for Russound I/O protocol. RIO is a text-based command set that improves third party integration support, making it easier to develop UI devices and applications that require Russound system integration and control. Available communication baud rates for RIO are 19.2, 38.4, 57.6 and 115.2 kHz.

***Arcam*** - When a source is configured for the Arcam T32 DAB Tuner Device Type, the COM port setting is automatically set to be compatible with the Arcam device. Controllers 2-6 in a multi-controller system will not be affected and their RS232 COM ports can be used for third party integration to the system using the RNET protocol.

When a source is configured for the Arcam T32 DAB Tuner, the port is NOT available for any other purpose as this setting takes priority over any prior COM port settings.

### *Arcam T32 Tuner Support*

The Arcam DAB tuner connects to the C-Series controller via the RS232 port. Only one Arcam DAB tuner can be added to a C-Series system, and must connect to Controller 1 RS232 port



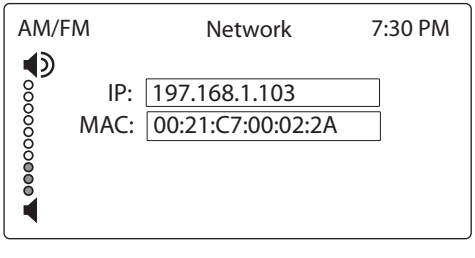

Arcam Tuner Configuration using RS232 Port

### *Ethernet Port*

The MCA-C5 has an RJ45 Ethernet port on the rear panel for connectivity to the local Ethernet network to perform SCS-C5 configuration over an IP network (read from device/write to device). It also supports RIO over IP (8 maximum sessions). Refer to the RIO protocol document for more details.

When the controller is connected to the local network, the network's DHCP server assigns an IP address to the controller. This IP address is then entered in the SCS-C5 start-up screen to enable configuration over IP.

The IP address can be seen on the MDK-C5 keypad. From the keypad's Home screen, choose Settings, then Installation. From the Installation menu, choose




Network settings to see the controller's IP address and MAC address.

During the DHCP process, messages may appear in the IP address window:

- LINK DOWN - the Ethernet port is not detecting a link
- DHCP WORKING - DHCP attempting to acquire an address
- DHCP FAILED - DHCP was unable to acquire an address or no DHCP server
- UNKNOWN ERROR - error other than DHCP failure

To restart DHCP, the Ethernet cable must be disconnected and reconnected to the MCA-C5, or power cycle the controller.

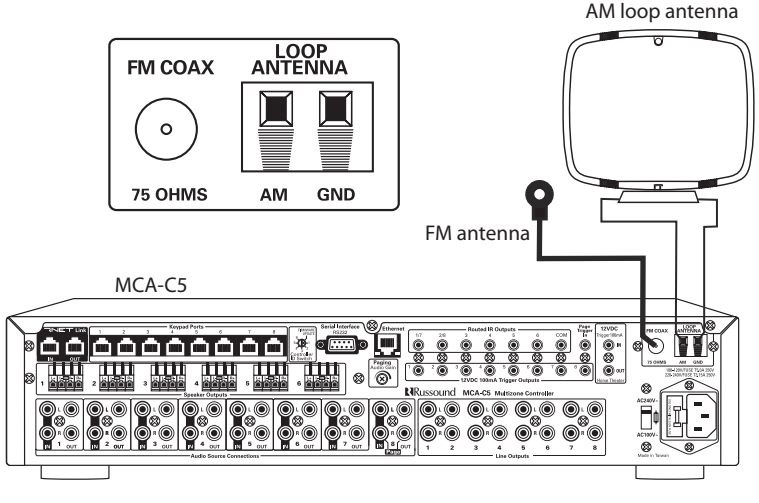
### *AM/FM Antenna Connections*

**AM Antenna**

Connect the included loop antenna for AM reception to the back panel, attaching the GND (ground) and AM ends to the appropriate connections. It is recommended to use an external outdoor or attic-mounted long wire antenna for best performance for AM reception. Use a 75-ohm to 300-ohm balun at the AM connection on the controller, and attach the 75-ohm coax cable to the balun.

**FM Antenna**

Attach the included FM antenna to the FM COAX connection on the back panel by pushing the F-type quick-connect termination of the antenna onto the FM connection. It is recommended to use an external outdoor or attic-mounted long wire antenna for best performance for FM reception. Attach the desired length of 75-ohm coax cable directly to the FM connection on the controller.



### *SCS-C5 software download*

The necessary software (SCS-C5) to program and configure the system is available via download from the Doc Center at www.russound.com. With your PC laptop, you can configure the system prior to connecting with the MCA-C5 controller. You can also configure the controller over Ethernet (read from device/write to device) when the MCA-C5 is connected to the network. The software has a Source Setup Wizard to aid in the setup and basic configuration of the sources. Once configured, the system information can be saved to a file. Reports can also be generated for a hard copy back up of the system configuration.

**Note:** A USB driver is included with the SCS-C5 download in the same folder. Have the "driver.zip" file unzipped and waiting (not installed yet) in a working directory. When the MCA-C5 is connected to the PC, Windows will prompt the user for driver information for the MCA-C5. Point the prompt to the working directory with the USB driver.

### *Programmable options with SCS-C5 software*

Items to be programmed with SCS-C5 software include:

**Zone and Source Names** - a list of predefined names for both are available and will be visible upon keypads and in reports. Custom naming is also possible following the character parameters.

**Source Exclusion** - defines the set of sources available to each zone.

**Party Mode Participation** - whether the zone can participate in Party mode.

**Zone and Source Linked Groups** - Two groups of each type are allowed per controller. Groups share source selection and party mode participation.

**All ON Participation** - defines whether or not the zone will respond to the All ON command.

**Page Source** - Source 8 can be selected as a page source.

**Page Event mode** - defines whether a zone will respond to a page event.

**Page Volume** - sets the volume of a page event in each zone.

**Power Management of Sources** - enabled / disabled per source. If enabled the source will turn on when the first zone is turned on or the home theater trigger has 12 VDC present. The source will turn off 5 minutes after the last zone is turned off, or 5 minutes after input is discontinued from the home theater trigger. This feature uses IR commands and audio signal sensing to power up sources and initiate audio to confirm source power states.

**Internal AM/FM Tuner on Source 1** - If the tuner is utilized, any input via the Source 1 input ports on the rear of the unit needs to be disabled.

**Sound Controls** - Adjust Bass, Treble, Balance, and Loudness initial settings.

**Fixed / Variable Line Output** - Determines if zone preamp output gain is at a fixed level or controllable with the zone volume adjustment.

**IR Keycode Learning** - allows IR codes to be learned, saved, and managed.

**RS232 COM Port Settings** - allows RS232 port to be re-purposed through SCS-C5 to support other protocols and various baud rates based on the intended use.

### *Start up*

1. Make connections of sources, speakers and keypads to the controller(s).
2. In a multiple controller configuration, set the controller IDs to unique numbers. Use CAT-5e linking cables of no more than 18 in (45.7 cm) to link the controllers.
3. Plug in and power the sources and controllers.
4. The left LED showing power on the front panel of each controller should be lit.
5. Configure the system using the SCS-C5 software. Load the program onto Controller#1 using the front USB port.
6. Check operation of the keypads, power on, and cycle through sources. The LED should be lit on the front of the controller if the corresponding keypad is on. The LED will not be lit if the keypad is not turned on or is absent.
7. Check operation of all keypad functions.
8. Check for functional IR signal pass-through (if applicable).
9. The system is now ready to use.

### *Troubleshooting*

- When the controller and the keypads are powered ON all the corresponding LEDs on the face of the controller will be green. Improper connection may cause one or more LEDs not to be lit. Check all connections.
- Cycle power by pressing the power button, waiting 10 seconds, and then pressing the power button again.
- Check connections from the keypads and speakers to the controller(s).
- If the keypad doesn't respond to commands ensure the OS update jumper on the rear of the keypad is in the RUN position (on the lower pins).

### *Alternate Factory Initialization*

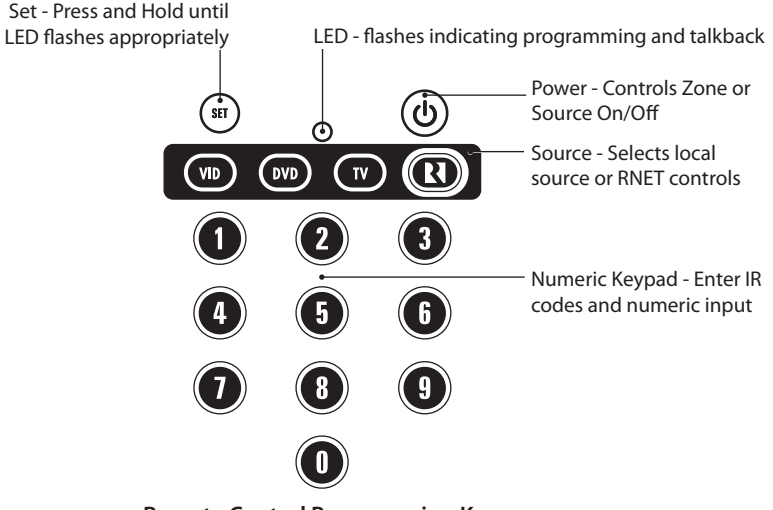
If SCS-C5 cannot connect to the MCA-C5, follow these steps to perform a factory initialization:

1. Power off the MCA-C5 controller.
2. Set the Controller ID switch (back panel) to point straight up (unused position).
3. Power on the MCA-C5.
4. Set the Controller ID switch to position 3.
5. Wait for the Power LED to flash, then power off the MCA-C5.
6. Return Controller ID switch to appropriate position and power back on.

### *Programming a Device*

To control Universal TV, VCR or DVD, Cable or Satellite Receivers, Amplifier or tuner, and Auxiliary devices, follow these steps. Before proceeding, find the codes for the devices you want to program in "Manufacturer's Codes" in this manual.

1. Turn on the device (e.g., DVD player) and if needed, load media.
2. Press a device key.
3. Press and hold SET until the red LED blinks twice, then release.
4. Enter the first five-digit code for your device. The LED blinks once as each digit is entered. If the code is correct, the LED blinks twice.
   Note: If the LED does not blink twice, repeat step 4 and try entering the code again.
5. Aim the remote at the device and press POWER. The device should turn off. If it does not, repeat steps 3-5, trying each code for your brand until you find one that works. If you cannot find a code that works see "Searching for Your Code" in this manual.
6. Repeat steps 1-5 for the other devices you want to control. For future reference, write down each working device code.




**Remote Control Programming Keys**

### *Searching for your Code*

If your device does not respond to the remote after trying all codes listed for our brand, or if your brand is not listed, try searching for your code:

1. Press a device key once.
2. Press and hold SET until the red LED blinks twice, then release.
3. Enter 9-9-1, then the device group number (see below). The LED blinks twice.
   - 0 Cable (Cable Converters, Video Accessories, Satellite Receivers)
   - 1 TV (TVs)
   - 2 VCR (VCRs, DVD players)
   - 3 Audio (Audio Amplifiers, Audio Amp/Tuners, CD players)
4. Aim the remote at the device and press POWER. The remote sends IR codes from its library to the selected device, starting with the most popular code first. If the device responds, go to step 6.
5. If the device does not respond, press CH+. The remote will try the next code. Continue until the device responds. Press CH- to try the previous code.
6. Press SET to lock in code. To search for other device codes, repeat steps 1-5.

### *Checking the Codes*

If you have set up the remote using the procedure in "Searching for Your Code," you may need to find out which five-digit code is operating your equipment. For example, to find out which code is assigned to your TV:

1. Press the key to which the TV is assigned.
2. Press and hold SET until the red LED blinks twice, then release.
3. Enter 9-9-0. The LED blinks twice.
4. To view the code's first digit, press 1. Count the LED blinks (e.g., three blinks =3), and enter the number in the appropriate device list in step 8 of "Programming a Device." If a code digit is 0, the LED does not blink.
5. Repeat step 4 for the remaining digits, using 2 for the second digit, and so on.
6. To check for other device codes, repeat steps 1-5, using the appropriate key.

## *Using Learning*

The SRC-C5 includes a Learning feature so you can add functions that are unique to your home entertainment devices (e.g., VCR Tracking Up or Down). The following precautions apply:

- The original remote control must be in working order and available for learning to work properly.
- Learned keys are mode specific, so each one can store a unique function for each mode.
- Do not use the following keys for learning: Device Keys, SET, Back, or Record.
- Learning capacity is approximately 40 to 100 keys, depending on the code being learned.
- Certain device codes are not learnable including multi-frequency types, some high frequency ones, and other unusual formats.
- For optimum learning, avoid high levels of ambient light such as natural sunlight or energy-efficient fluorescent lights.

### Programming a learned key

***Note**: If more than 15 seconds pass between key presses, the remote exits programming.*

1. Press and hold SET until LED flashes twice.
2. Press 9-7-5.
3. Press a device key once to assign a mode for learning.
4. Place the SRC-C5 head-to-head (about 2" apart) from your original remote control. Also locate the key (on original remote control) that will serve as the teaching function.
5. On the SRC-C5, press a key where the learned function will be stored.
6. On the original remote, press and hold the key to be learned. The SRC-C5 LED will turn off. Continue holding the key on the original remote until the SRC-C5 LED blinks twice.

   **Note**: If the LED displays one long blink, a learning error has occurred. Try repeating this step again until a successful capture occurs. If the function is still not captured, press and hold SET to exit programming. Review the learning precautions listed above, or the Troubleshooting tips below, before beginning again at step 1.
7. Repeat steps 4-6 for another key on same device, or repeat steps 1-6 for another device.

### Deleting a single learning key

1. Select a source.
2. Press and hold SET until the LED flashes twice.
3. Press 9-7-6.
4. Press the key (twice) containing the learned function to be deleted. The remote blinks twice.
5. Repeat steps 1-4 for another key on the same source, or press and hold SET to exit programming.

### Deleting all learned keys in a specific mode

1. Press and hold SET until the LED blinks twice.
2. Press 9-7-6.
3. Press a device key twice to delete all the learned keys for that mode. The LED blinks twice.
4. Repeat steps 1-3 for another set of keys for a device, or press and hold SET to exit programming.

## *Changing Volume Lock*

The SRC-C5 remote is preset to allow independent volume control of each selected device (Global Volume Unlock). However, you may change the Volume Lock setting to Global Volume Lock so that one device's volume will control volume in all other modes. After that, you can perform Individual Volume Unlock on a selected device to set its volume control for independent operation or Global Volume Unlock to remove all volume locking.

**Locking Volume Control to One Mode (Global Volume Lock)**

1. Press and hold SET until the red LED blinks twice, then release.
2. Enter 9-9-3 and then press the mode key for the device you want to control volume (e.g., TV). The LED blinks twice. Now when you press VOL+, VOL-, or Mute, the selected device will control the volume regardless of the current mode.

**Unlocking All Volume Control (Restoring Global Unlock)**

1. Press and hold SET until the red LED blinks twice, then release.
2. Enter 9-9-3 and then press VOL+. The LED blinks four times. Volume is independently controlled for all programmed devices.

**Unlocking a Single Device's Volume Control**

1. Press a device key (VID, DVD, etc.).
2. Press and hold SET until the red LED blinks twice, then release.
3. Enter 9-9-3 and then press VOL-. The LED blinks four times. Volume is independently controlled for the selected devices.

## MANUFACTURER's CODES

### Setup Codes for Audio Amplifiers

| | |
|---|---|
| Accuphase | 30382 |
| Acurus | 30765 |
| Adcom | 30577, 31100 |
| Aragon | 30765 |
| AudioSource | 30011 |
| Bel Canto Design | 31583 |
| Bose | 30674 |
| Carver | 30892 |
| Curtis Mathes | 30300 |
| Durabrand | 31561 |
| GE | 30078 |
| Harman/Kardon | 30892 |
| JVC | 30331 |
| Kenwood | 30356 |
| Klipsch | 30765 |
| Left Coast | 30892 |
| Lenoxx | 31561 |
| Luxman | 30165 |
| Marantz | 30321, 30892 |
| Mark Levinson | 31483 |
| Mondial | 30765 |
| Nakamichi | 30321 |
| NEC | 30264 |
| Optimus | 30300, 30395 |
| Parasound | 30246 |
| Philips | 30892 |
| Pioneer | 30013, 30300 |
| Polk Audio | 30892 |
| PS Audio | 31523 |
| RCA | 30300 |
| Realistic | 30395 |
| Sansui | 30321 |
| Shure | 30264 |
| Sony | 30689, 30815 |
| Soundesign | 30078, 30211 |
| Victor | 30331 |
| Wards | 30013, 30078, 30211 |
| Yamaha | 30133, 30143, 30354, 30504 |
| YBA | 31502 |

### Setup Codes for Audio Amp/Tuners

| | |
|---|---|
| ADC | 30531 |
| Adcom | 30616, 31616, 31617 |
| Aiwa | 30121, 30158, 30189, 30405, 31089, 31243, 31321, 31347, 31388, 31405, 31641 |
| Akai | 30076, 30224, 31255, 31512 |
| Alco | 31390 |
| AMC | 31077 |
| Amphion Media Works | 31563, 31615 |
| Amplifier Technologies | 31584 |
| AMW | 31563, 31615 |
| Anam | 31074, 31609 |
| Apex Digital | 31257, 31430 |
| Arcam | 31120, 31189 |
| Atlantic Technology | 31487 |
| Audiophase | 31387 |
| Audiotronic | 31189 |
| Audiovox | 31390, 31627 |
| Bel Canto Design | 31584 |
| Bose | 30639, 31229, 31253 |
| Brix | 31602 |
| Cambridge Soundworks | 31370, 31477 |
| Capetronic | 30531 |
| Carver | 30008, 30042, 30121, 30189, 30360, 31089, 31189, 31289 |
| Casio | 30195 |
| Clarinette | 30195 |
| Classic | 31352 |
| Coby | 31263, 31389, 31513 |
| Compaq | 31136 |
| Criterion | 31420 |
| Curtis | 30797, 31596 |
| Curtis Mathes | 30080 |
| Daewoo | 31250 |
| Dell | 31383 |
| Denon | 30004, 30121, 30273, 30771, 31104, 31142, 31311, 31360, 30023, 30302 |
| Emerson | 30255, 30424 |
| Fisher | 30042, 30219, 30360, 31409, 31801 |
| Fosgate | 31487 |
| Garrard | 30146, 30281, 30424, 30440, 30463 |
| Gateway | 31517, 31567 |
| GE | 31379 |
| Glory Horse | 31263 |
| Go Video | 31352, 31532 |
| GoldStar | 30281 |
| GPX | 31299 |
| Hafler | 30146 |
| Harman/Kardon | 30110, 30189, 30891, 31289, 31306 |
| Hewlett Packard | 31181 |
| Hitachi | 31273, 31801 |
| Initial | 31426 |
| Inkel | 30062 |
| Integra | 30135, 31298 |
| JBL | 30110, 31306 |
| JVC | 30074, 31058, 31263, 31282, 31374, 31495 |
| Kansai | 30440 |
| Kenwood | 30027, 30042, 30077, 30186, 30239, 30313, 30314, 30569, 31027, 31051, 31052, 31313, 31569, 31570 |
| KLH | 31390, 31412, 31428 |
| Koss | 30255, 30424, 31366, 31497 |
| Lasonic | 31510, 31798 |
| Lenoxx | 31437 |
| Lexicon | 31076 |
| LG | 30281, 31293 |
| Linn | 30189 |
| Liquid Video | 31497 |
| Lloyd's | 30195 |
| LXI | 30181 |
| Magnavox | 30128, 30189, 30195, 30391, 30531, 31089, 31189, 31269, 31514 |
| Marantz | 30039, 30128, 30189, 30200, 31089, 31189, 31269, 31289 |
| McIntosh | 31289 |
| MCS | 30039, 30346 |
| Memorex | 31596 |
| Micromega | 31189 |
| Mitsubishi | 31393 |
| Modulaire | 30195 |
| Musicmagic | 31089 |
| Myryad | 31189 |
| NAD | 30320 |
| Nakamichi | 30097, 30347, 31313, 31555 |
| NEC | 30235 |
| Norcent | 31389 |
| Nova | 31389 |
| Onkyo | 30135, 30380, 30842, 31298, 31531 |
| Optimus | 30042, 30080, 30177, 30181, 30186, 30219, 30440, 30531, 30670, 30738, 30797, 30801, 30849, 31023, 31074 |
| Oritron | 31366, 31497 |
| Outlaw | 31487 |
| Outlaw Audio | 31487 |
| Panasonic | 30039, 30309, 30367, 30518, 31288, 31308, 31316, 31350, 31363, 31509, 31518, 31548, 31633, 31763, 31764 |
| Penney | 30195 |
| Philips | 30189, 30391, 31089, 31120, 31189, 31266, 31268, 31269, 31283, 31365, 31368 |
| Pioneer | 30014, 30080, 30150, 30244, 30531, 30630, 30801, 31023, 31084, 31184, 31343, 31384 |
| Polaroid | 31508 |
| Polk Audio | 30189, 31289 |
| Proscan | 31254 |
| Quasar | 30039 |
| RadioShack | 31263 |
| RCA | 30054, 30080, 30346, 30360, 30530, 30531, 31023, 31074, 31154, 31254, 31390, 31511, 31609 |
| Realistic | 30163, 30181, 30195 |
| Regent | 31437 |
| Rio | 31383, 31869 |
| Rio Audio | 31383 |
| Saba | 31519 |
| Samsung | 31295, 31500 |
| Sansui | 30189, 30193, 30346, 31089, 31189, 31764 |
| Sanyo | 30219, 30801, 31251, 31469, 31801 |
| Scott | 30163, 30322 |
| Sharp 3 | 0186, 30771, 31286, 31361, 31386 |
| Sharper Image | 30797, 31263, 31385, 31409, 31410, 31411, 31416, 31545, 31546, 31549, 31556, 31723 |
| Sherwood | 30062, 30491, 30502, 31077, 31423, 31517, 31567, 31653 |
| Shinsonic | 31426 |
| Sirius | 31602, 31627 |
| Sonic | 30281 |
| Sonic Blue | 31383, 31532, 31869 |
| Sony | 30158, 30168, 31042, 31058, 31131, 31158, 31258, 31347, 31349, 31367, 31371, 31382, 31406, 31441, 31442, 31458, 31503, 31529, 31558, 31658, 31758, 31759, 31858 |
| Soundesign | 30670 |
| Stereophonics | 31023 |
| Sunfire | 30313, 30314, 31052, 31313 |
| Sylvania | 30797 |
| Teac | 30163, 30463, 31074, 31267, 31390, 31528 |
| Technics | 30039, 30208, 30309, 30518, 31308, 31309, 31384, 31518, 31633 |
| Techwood | 30281 |
| Thorens | 31189 |
| Toshiba | 30080, 30135 |
| Venturer | 30849, 31390 |
| Victor | 30074 |
| Wards | 30014, 30054, 30080, 30158, 30189 |
| XM | 31406 |
| Yamaha | 30081, 30176, 30186, 31176, 31276, 31331, 31375 |
| Yorx | 30195 |
| Zenith | 30281, 30857, 31293 |

### Setup Codes for Cable Converters

| | |
|---|---|
| ABC | 00001, 00003, 00007, 00008, 00011, 00013, 00014, 00017 |
| Allegro | 00153, 00315 |
| Americast | 00899 |
| Antronix | 00022, 00207 |
| Archer | 00022, 00153, 00207, 00797 |
| Belcor | 00056 |
| Bell & Howell | 00014 |
| Bell South | 00899 |
| Cable Star | 00056 |
| Cabletenna | 00022 |
| Cableview | 00022 |
| Century | 00153 |
| Citizen | 00153, 00315 |
| Clearmaster | 00883 |
| ClearMax | 00883 |
| Cleartron | 01327 |
| Colour Voice | 00025, 00031 |

## Setup Codes for Cable Converters

*(continued)*

| | |
|---|---|
| Comtronics | 00040 |
| Contec | 00019 |
| Coolmax | 00883 |
| Digi | 00637 |
| Director | 00476 |
| Dumont | 00637 |
| Eastern | 00002 |
| Emerson | 00797 |
| Everquest | 00015, 00040 |
| Focus | 00400 |
| Garrard | 00153 |
| GC Electronics | 00056, 00207 |
| Gemini | 00015, 00797 |
| General Instrument | 00003, 00011, 00276, 00476, 00810 |
| Global | 01327 |
| GoldStar | 00040, 00144 |
| Goodmind | 00797 |
| Hamlin | 00009, 00020, 00034, 00259, 00273 |
| Hitachi | 00011 |
| Hytex | 00007 |
| Jasco | 00015, 00153, 00315 |
| Jerrold | 00003, 00011, 00012, 00014, 00015, 00276, 00476, 00810 |
| Linsay | 00440 |
| Magnavox | 00027 |
| Memorex | 00000 |
| Motorola | 00014, 00276, 00476, 00810, 01106, 01254, 01376 |
| Movie Time | 00063, 00156 |
| Multitech | 00883 |
| Novaplex | 00618 |
| NSC | 00063, 00156 |
| Oak | 00007, 00019 |
| Optimus | 00021 |
| Pace | 00008, 00237, 01877 |
| Panasonic | 00000, 00021, 00107 |
| Panther | 00637 |
| Paragon | 00000 |
| Philips | 00025, 00027, 00031, 00153, 00317, 01305 |
| Pioneer | 00144, 00533, 00877, 01021, 01877 |
| Popular Mechanics | 00400 |
| Pulsar | 00000 |
| Quasar | 00000 |
| RadioShack | 00015, 00315, 00797, 00883 |
| RCA | 00021 |
| Realistic | 00207 |
| Recoton | 00400 |
| Regal | 00020, 00259, 00273, 00279 |
| Regency | 00002 |
| Rembrandt | 00011 |
| Runco | 00000 |
| Samsung | 00040, 00144 |
| Scientific Atlanta | 00008, 00017, 00477, 00877, 01877 |
| Seam | 00510 |
| Signal | 00015, 00040 |
| Signature | 00011 |
| SL Marx | 00040 |
| Sony | 01006 |
| Sprucer | 00021 |
| Starcom | 00003, 00015 |
| Stargate | 00015, 00040, 00797 |
| Starquest | 00015 |
| Supercable | 00276 |
| Supermax | 00883 |
| Sylvania | 00001 |
| Tandy | 00258 |
| Teleview | 00040 |
| Texscan | 00001 |
| TFC | 00310 |
| Time Warner Cable | 01877 |
| Timeless | 00040 |
| Tocom | 00012, 00013 |
| Torx | 00003 |
| Toshiba | 00000 |
| Tristar | 00883 |
| Tusa | 00015 |
| TV86 | 00063 |
| Unika | 00022, 00153, 00207 |
| United Artists | 00007 |
| Universal | 00022, 00056, 00153, 00191, 00207 |
| V2 | 00883 |
| Viewmaster | 00883 |
| Viewstar | 00027, 00063, 00258 |
| Vision | 00883 |
| Vortex View | 00883 |
| Zenith | 00000, 00525, 00899 |
| Zentek | 00400 |

## Setup Codes for CD Players

| | |
|---|---|
| ADC | 30018 |
| Adcom | 30155, 30234 |
| Aiwa | 30012, 30124, 30157 |
| Akai | 30156 |
| Arcam | 30157 |
| Audio Alchemy | 30194 |
| Audio-Technica | 30170 |
| BSR | 30194, 30245 |
| Burmester | 30420 |
| California Audio Labs | 30029, 30303 |
| Carrera | 30194 |
| Carver | 30157, 30179, 30437 |
| Classic | 31297 |
| Crown | 30122 |
| DAK | 30245 |
| DBX | 30254 |
| Denon | 30003, 30626, 30873 |
| DKK | 30000 |
| DMX Electronics | 30157 |
| Emerson | 30155, 30164, 30305, 30469 |
| Fisher | 30088, 30174, 30179, 30342, 31325 |
| Garrard | 30245, 30280, 30393, 30420, 30425 |
| GE | 30009 |
| Gemini | 30625 |
| Genexxa | 30032, 30164, 30305 |
| GoldStar | 30417, 31208 |
| GPX | 31296 |
| Harman/Kardon | 30157, 30173, 30426, 31202 |
| Hitachi | 30032, 30155 |
| Integra | 30101 |
| JVC | 30072, 30655, 31294 |
| Kenwood 3 | 0028, 30037, 30190, 30626, 30681, 30826 |
| KLH | 31318 |
| Kodak | 30287 |
| Koss | 31317 |
| Krell | 30157 |
| Kyocera | 30018 |
| LG | 31208 |
| Linn | 30157 |
| Luxman | 30093 |
| LXI | 30305 |
| Magnavox | 30157, 30305 |
| Marantz | 30029, 30157, 30180, 30626 |
| Mark Levinson | 31484 |
| McIntosh | 30287 |
| MCS | 30029, 30043 |
| Miro | 30000 |
| Mission | 30157 |
| MTC | 30420, 30625 |
| Nakamichi | 30147 |
| NEC | 30043, 30234 |
| Nikko | 30164, 30170, 30174, 30625 |
| NSM | 30157 |
| Onkyo | 30101, 30868 |
| Optimus | 30000, 30032, 30037, 30087, 30145, 30175, 30179, 30194, 30196, 30280, 30305, 30342, 30420, 30426, 30437, 30468, 31063, 31075 |
| Panasonic | 30029, 30303, 30752 |
| Parasound | 30194, 30420 |
| Philips | 30157, 30287, 30626 |
| Pioneer | 30032, 30305, 30468, 31062, 31063, 31087 |
| Polk Audio | 30157 |
| Proceed | 30420 |
| Proton | 30157 |
| QED | 30157 |
| Quad | 30157 |
| Quasar | 30029 |
| RadioShack | 31075 |
| RCA | 30009, 30032, 30053, 30155, 30179, 30305, 30420, 30468, 30764, 31062 |
| Realistic | 30155, 30164, 30175, 30179, 30180, 30420 |
| Rotel | 30157, 30420 |
| SAE | 30157 |
| Sansui | 30157, 30202, 30305 |
| Sanyo | 30087, 30179 |
| Scott | 30155, 30164, 30305 |
| Sears | 30305 |
| Sharp | 30037, 30180, 30861 |
| Sherwood | 30180, 30196, 30426, 31067 |
| Shure | 30043 |
| Simaudio | 30157 |
| Sonic Frontiers | 30157 |
| Sony | 30000, 30100, 30185, 30490, 30604, 30605, 31364 |
| Soundesign | 30145, 30425 |
| STS | 30018 |
| Sugden | 30157 |
| Symphonic | 30305 |
| TAG McLaren | 30157 |
| Tascam | 30420 |
| TDK | 31208 |
| Teac | 30174, 30180, 30393, 30420 |
| Technics | 30029, 30207, 30303 |
| Tivoli Audio | 31553 |
| Vector Research | 30194, 30417 |
| Victor | 30072 |
| Wards | 30053, 30157 |
| Yamaha | 30036, 30170, 30187, 30490, 30888, 31292 |
| YBA | 30625 |
| Yorx | 30461 |

## Setup Codes for Video Accessories

| | |
|---|---|
| ABS | 01272 |
| Alienware | 01272 |
| CyberPower | 01272 |
| Gateway | 01272 |
| Hewlett Packard | 01267, 01272 |
| Howard Computers | 01272 |
| HP | 01272 |
| Hush | 01272 |
| iBUYPOWER | 01272 |
| InterVideo | 01393 |
| Jensen | 01165 |
| JVC | 01384 |
| Keyspan | 01344 |
| KWorld | 01403 |
| LG | 01415 |
| Linksys | 01272, 01365 |
| Macro Image Technology | 01383 |
| Media Center PC | 01272 |
| Microsoft | 01272 |
| Mind | 01272 |
| Motorola | 01363 |
| MyHD | 01383 |
| Niveus Media | 01272 |

## Setup Codes for Video Accessories

*(continued)*

| | |
|---|---|
| Northgate | 01272 |
| Panasonic | 01120 |
| Pinnacle Systems | 01268 |
| Pioneer | 01010 |
| Princeton | 00113, 00295 |
| Rabbit | 00081 |
| Ricavision | 01272 |
| Roku | 01486 |
| Samsung | 01190, 01490 |
| Sensory Science | 01126 |
| Sharp | 01010 |
| SMC | 01456 |
| Sony | 01272, 01324, 01364 |
| Stack 9 | 01272 |
| Streamzap | 01309 |
| Systemax | 01272 |
| Tagar Systems | 01272 |
| TeleCaption | 00171 |
| Toshiba | 01272 |
| Touch | 01272 |
| Viewsonic | 01272, 01329 |
| Vizio | 01126 |
| Voodoo | 01272 |
| ZT Group | 01272 |

## Setup Codes for DVD Players

| | |
|---|---|
| Adcom | 21094 |
| Advent | 21016 |
| Aiwa | 20641, 21912 |
| Akai | 20695, 20770, 20899, 21089, 21975 |
| Allegro | 20869 |
| Amphion Media Works | 20872, 21176, 22001, 22016 |
| AMW | 20872, 21176, 22001, 22016 |
| Anam | 21913 |
| Apex Digital | 20672, 20717, 20755, 20794, 20796, 20797, 20830, 21004, 21020, 21056, 21061, 21100, 21915, 21937 |
| Aspire Digital | 21168 |
| Audiologic | 20736 |
| Audiovox | 20717, 21041, 21071, 21072, 21121, 21122 |
| Axion | 21071, 21072 |
| B & K | 20655, 20662 |
| Bel Canto Design | 21571 |
| Blaupunkt | 20717 |
| Blue Parade | 20571 |
| Broksonic | 20695, 20868 |
| Byd:sign | 20872 |
| California Audio Labs | 20490 |
| Cambridge Soundworks | 21916 |
| CAVS | 21057 |
| CineVision | 20833, 20869, 20876 |
| Classic | 21917 |
| Coby | 20778, 20852, 21086, 21107, 21165, 21923 |
| Criterion | 22007 |
| Curtis Mathes | 21087 |
| CyberHome | 20816, 21023, 21024, 21117, 21129 |
| Daewoo | 20705, 20784, 20833, 20869, 21172, 21918 |
| Daytek | 20872 |
| Denon | 20490, 20634 |
| Disney | 20675 |
| Dual | 21068, 21085 |
| DVD2000 | 20521 |
| Emerson | 20591, 20675, 20821 |
| Enterprise | 20591 |
| Fisher | 20670, 21919 |
| Funai | 20675 |
| Gateway | 21073, 21077, 21158 |
| GE | 20522, 20717, 20815 |
| General Electric | 20717 |
| Go Video | 20715, 20744, 20783, 20833, 20869, 21044, 21075, 21099, 21144, 21158, 21730, 21970 |
| Go Vision | 21071, 21072 |
| GPX | 20699, 20769 |
| Gradiente | 20490 |
| Greenhill | 20717 |
| Grundig | 20539 |
| Harman/Kardon | 20582, 20702 |
| Hitachi | 20573, 20664, 21919 |
| Hiteker | 20672 |
| Initial | 20717, 21931 |
| Integra | 20571, 20627, 21924 |
| Jamo | 22003 |
| Jaton | 21078 |
| JBL | 20702, 21926 |
| Jensen | 21016 |
| JVC | 20558, 20623, 20867, 21901, 21940 |
| jWin | 21049, 21051 |
| Kenwood | 20490, 20534, 20682, 21063 |
| KLH | 20717, 21020, 21149, 21939 |
| KLH Digital | 20717 |
| Konka | 20711, 20719, 20720, 20721 |
| Koss | 20651, 21980 |
| Landel | 20826 |
| Lasonic | 20798, 21173 |
| Lecson | 21533 |
| Lenoxx | 21938 |
| LG | 20591, 20801, 20869, 21906 |
| Liquid Video | 21980 |
| LiteOn | 21058, 21158 |
| Loewe | 20511 |
| Magnasonic | 20651, 20769 |
| Magnavox | 20503, 20539, 20646, 20675, 20821, 21914, 21976 |
| Malata | 20782, 21159 |
| Marantz | 20539 |
| McIntosh | 21533 |
| Memorex | 20695 |
| Microsoft | 20522 |
| Mintek | 20717, 20839, 21990 |
| Mitsubishi | 20521, 21521 |
| Momitsu | 21082 |
| NAD | 20591, 20692 |
| NEC | 20785 |
| Nesa | 20717 |
| Next Base | 20826 |
| Niro | 22024 |
| Norcent | 20872, 21003, 21107, 21923 |
| Nova | 21923 |
| Onkyo | 20503, 20627, 20792, 21924, 21985 |
| Orion | 20695 |
| Oritron | 20651, 21980 |
| Panasonic | 20490, 20503, 20632, 21362, 21462, 21490, 21762, 21907, 21908, 21909, 21910, 21925, 21986, 21990, 22017 |
| Philco | 22000 |
| Philips | 20503, 20539, 20646, 20675, 20854, 21914, 20885 |
| PianoDisc | 21024 |
| Pioneer | 20525, 20571, 20631, 20632, 20638, 21571, 21902, 21965 |
| Polaroid | 21020, 21061, 21086, 21200, 21998 |
| Polk Audio | 20539 |
| Portland | 20770 |
| Presidian | 20675 |
| Prima | 21016 |
| Princeton | 20674 |
| Proceed | 20672 |
| Proscan | 20522 |
| ProVision | 20778 |
| Qwestar | 20651 |
| RCA | 20522, 20571, 20717, 20822, 21022, 21132, 21193, 21913, 21965, 21974 |
| Regent | 21938 |
| Rio | 20869, 22002 |
| Rotel | 20623 |
| Rowa | 20823 |
| Saba | 21977 |
| Sampo | 20698, 20752 |
| Samsung | 20490, 20573, 20744, 20820, 20899, 21044, 21075, 21932, 21979 |
| Sansui | 20695 |
| Sanyo | 20670, 20695, 20873, 21919, 21967 |
| Sensory Science | 21158 |
| Sharp | 20630, 20675, 20752 |
| Sharper Image | 21117, 21995 |
| Sherwood | 20633, 20770, 21043, 21077 |
| Shinsonic | 20533, 20839, 21931 |
| Sigma Designs | 20674 |
| Sonic Blue | 20869, 21099, 21970, 22002 |
| Sony | 20533, 20772, 20864, 21033, 21533, 21903, 21904, 21934, 21981, 22020 |
| Sova | 21122 |
| Sungale | 21074 |
| Superscan | 20821 |
| SVA | 20860, 21105 |
| Sylvania | 20630, 20675, 20821 |
| Symphonic | 20675 |
| Teac | 20717, 20809, 21984 |
| Technics | 20490 |
| Technosonic | 20730 |
| Techwood | 20692 |
| Terapin | 21031 |
| Theta Digital | 20571 |
| Tivo | 21996 |
| Toshiba | 20503, 20695, 21045, 21154, 22006, 21988, 21996 |
| Tredex | 20799, 20800, 20803, 20804 |
| Urban Concepts | 20503 |
| US Logic | 20839 |
| V | 21064 |
| Vizio | 21064, 21226 |
| Vocopro | 21027 |
| Xbox | 20522 |
| Xwave | 21001 |
| Yamaha | 20490, 20539, 20545 |
| Yamakawa | 20872 |
| Zenith | 20503, 20591, 20869, 21906 |

## Setup Codes for Satellite Receivers

| | |
|---|---|
| AlphaStar | 00772 |
| Chaparral | 00216 |
| Crossdigital | 01109 |
| DirecTV | 00099, 00247, 00392, 00566, 00639, 00724, 00749, 00819, 01076, 01108, 01109, 01142, 01392, 01414, 01442, 01443, 01444, 01639, 01640, 01749, 01856 |
| Dish Network | 00775 |
| Dish Network System | 00775, 01005, 01170, 01505, 01775 |
| Dishpro | 00775, 01005, 01505, 01775 |
| Echostar | 00775, 01005, 01170, 01505, 01775 |
| Expressvu | 00775, 01775 |
| Funai | 00338 |
| GE | 00392, 00566 |
| General Instrument | 00869 |
| GOI | 00775, 01775 |
| Goodmans | 01246 |
| Hisense | 01535 |
| Hitachi | 00214, 00489, 00491, 00819, 01250, 00023, 00201 |
| HTS | 00775, 01775 |
| Hughes | 00749, 01442, 01749 |
| Hughes Network Systems | 00749, 01142, 01442, 01443, 01444, 01749 |
| iLo | 01535 |

## Setup Codes for Satellite Receivers

*(continued)*

| | |
|---|---|
| Jerrold | 00869 |
| JVC | 00492, 00775, 01170, 01775 |
| LG | 01226, 01414 |
| Magnavox | 00722, 00724 |
| Matsushita | 00214, 00340, 00500 |
| Memorex | 00724 |
| Mitsubishi | 00749 |
| Motorola | 00856, 00869 |
| NEC | 00496, 01270 |
| Next Level | 00869 |
| Panasonic | 00214, 00247, 00340, 00500, 00701 |
| Paysat | 00724 |
| Philips | 00099, 00722, 00724, 00749, 00819, 01076, 01142, 01442, 01749 |
| Pioneer | 01442 |
| Proscan | 00392, 00566 |
| Proton | 01535 |
| RadioShack | 00869 |
| RCA | 00143, 00392, 00566, 00855, 01392 |
| Samsung | 01108, 01109, 01142, 01276, 01442 |
| Sanyo | 00493, 01219 |
| Sharp | 00494 |
| Sony | 00163, 00294, 00639, 01639, 01640 |
| Star Choice | 00869 |
| Tivo | 01142, 01442, 01443, 01444 |
| Toshiba | 00486, 00749, 00790, 00819, 01285, 01749 |
| UltimateTV | 01392, 01640 |
| Uniden | 00722, 00724 |
| US Digital | 01535 |
| USDTV | 01535 |
| Voom | 00869 |
| Zenith | 01856 |

## Setup Codes for TVs

| | |
|---|---|
| A-Mark | 10003 |
| Abex | 10032 |
| Admiral | 10093, 10463 |
| Advent | 10761, 10783, 10815, 10817, 10842, 11933 |
| Adventura | 10046 |
| Aiko | 10092 |
| Aiwa | 11910, 11911, 11914 |
| Akai | 10030, 10060, 10672, 10702, 10812, 11903, 11935 |
| Alaron | 10179 |
| Albatron | 10700, 10843 |
| Ambassador | 10177 |
| America Action | 10180 |
| Ampro | 10751 |
| Anam | 10180 |
| Anam National | 10055, 10161 |
| AOC | 10003, 10019, 10030, 10052, 10185 |
| Apex Digital | 10156, 10748, 10765, 10767, 10879, 11943 |
| Archer | 10003 |
| Audiovox | 10003, 10092, 10180, 10451, 10623, 10802, 10875, 11937, 11951, 11952 |
| Aventura | 10171 |
| Axion | 11937 |
| Belcor | 10019 |
| Bell & Howell | 10016, 10154 |
| BenQ | 11032, 11756 |
| Boxlight | 10893 |
| Bradford | 10180 |
| Brockwood | 10019 |
| Broksonic | 10003, 10180, 10236, 10463, 11905, 11911, 11929, 11935, 11938 |
| Candle | 10030, 10046, 10056, 10186 |
| Carnivale | 10030 |
| Carver | 10054, 10170 |
| Celebrity | 10000 |
| Celera | 10765 |
| Changhong | 10765 |
| Citizen | 10030, 10039, 10046, 10056, 10060, 10092, 10186, 10280, 11928 |
| Clairtone | 10185 |
| Clarion | 10180 |
| Colt | 11906 |
| Commercial Solutions | 10047, 11447 |
| Concerto | 10056 |
| Contec | 10157, 10180, 10185 |
| Craig | 10161, 10180 |
| Crosley | 10054 |
| Crown | 10039, 10180 |
| Curtis Mathes | 10016, 10030, 10039, 10047, 10054, 10056, 10060, 10093, 10145, 10154, 10166, 10451, 10466, 10702, 11147, 11347, 11919 |
| CXC | 10180 |
| Daewoo | 10019, 10039, 10092, 10451, 10623, 10661, 10672, 11661, 11909, 11928 |
| Daytron | 10019 |
| Dell | 11080, 11178, 11454 |
| Denon | 10145, 10511 |
| Denstar | 10628 |
| Dumont | 10017, 10019 |
| Durabrand | 10003, 10171, 10178, 10180, 10463, 11034, 11463 |
| Dwin | 10093, 10720, 10774 |
| Electroband | 10000, 10185 |
| Electrograph | 11755 |
| Electrohome | 10381 |
| Emerson | 10019, 10038, 10039, 10154, 10171, 10177, 10178, 10179, 10180, 10185, 10236, 10280, 10282, 10451, 10463, 10623, 11905, 11909, 11911, 11928, 11929, 11944 |
| Envision | 10030, 10813 |
| Epson | 10833, 10840 |
| ESA | 10171, 10812 |
| Fisher | 10154, 10159 |
| Fujitsu | 10179, 10186, 10683, 10809, 10853 |
| Funai | 10171, 10179, 10180, 10264, 10342, 11904, 11913 |
| Futuretech | 10180 |
| Gateway | 11755, 11756 |
| GE | 10021, 10027, 10047, 10051, 10055, 10135, 10178, 10282, 10451, 11347, 11447, 11907, 11917, 11919, 11922 |
| General | 10186 |
| Gibralter | 10017, 10019, 10030 |
| Go Video | 10886 |
| GoldStar | 10001, 10019, 10030, 10032, 10178, 11926 |
| Goodmans | 10360 |
| Grundig | 10683 |
| Grunpy | 10179, 10180 |
| Haier | 10768, 11034 |
| Hallmark | 10178 |
| Harley Davidson | 10179, 11904 |
| Harman/Kardon | 10054 |
| Harvard | 10180 |
| Havermy | 10093 |
| Helios | 10865 |
| Hello Kitty | 10451 |
| Hisense | 10748 |
| Hitachi | 10016, 10032, 10038, 10056, 10145, 10151, 10178, 10179, 11145, 11150, 11245, 11904 |
| Hyundai | 10849 |
| Infinity | 10054 |
| Inteq | 10017 |
| Janeil | 10046 |
| JBL | 10054 |
| JCB | 10000 |
| Jensen | 10761, 10815, 10817, 11933 |
| JVC | 10036, 10053, 10160, 10653, 11253, 11923 |
| Kaypani | 10052 |
| KEC | 10180 |
| Kenwood | 10019, 10030 |
| KLH | 10765, 10767 |
| Kloss | 10024, 10046 |
| Konka | 10628, 10632, 10638, 10703, 10707, 11939, 11940 |
| KTV | 10030, 10039, 10180, 10185, 10280 |
| LG | 10178, 10442, 10700, 10856, 11178, 10006, 10022 |
| Lloyd's | 11904 |
| Loewe | 10136 |
| Logik | 10016 |
| Luxman | 10056 |
| LXI | 10047, 10054, 10154, 10156, 10178 |
| Magnasonic | 11913, 11928 |
| Magnavox | 10020, 10024, 10030, 10036, 10054, 10096, 10179, 10186, 10187, 10386, 10706, 10802, 11254, 11454, 11904, 11913, 11931, 11944 |
| Magnin | 11907 |
| Majestic | 10016 |
| Marantz | 10030, 10054, 10704, 10854, 10855, 11154, 11454 |
| Maruman | 10391, 10627 |
| Matsushita | 10161, 10250, 10650 |
| Maxent | 11755 |
| Megapower | 10700 |
| Megatron | 10003, 10145, 10178 |
| MEI | 10185 |
| Memorex | 10016, 10150, 10154, 10178, 10179, 10463, 11911, 11920, 11924, 11926, 11927 |
| MGA | 10019, 10030, 10150, 10178, 11907 |
| Midland | 10017, 10032, 10039, 10047, 10051, 10135 |
| Minutz | 10021 |
| Mitsubishi | 10019, 10036, 10093, 10150, 10178, 10250, 10836, 10868, 11150, 11250, 11917 |
| Monivision | 10700, 10843 |
| Motorola | 10055, 10093 |
| MTC | 10019, 10030, 10056, 10060, 10185 |
| Multitech | 10180 |
| NAD | 10156, 10178, 10866 |
| NEC | 10019, 10030, 10036, 10056, 10156, 10170, 10474, 10497, 10882, 11704 |
| NetTV | 11755 |
| Nikko | 10030, 10092, 10178 |
| Norcent | 10748, 10824 |
| Noshi | 10018 |
| NTC | 10092 |
| Onwa | 10180 |
| Optimus | 10154, 10166, 10250, 10650, 11913, 11924, 11927 |
| Optoma | 10887 |
| Optonica | 10093, 10165 |
| Orion | 10179, 10236, 10463, 11463, 11905, 11911, 11929 |
| Panasonic | 10051, 10055, 10161, 10250, 10650, 11410, 11919, 11924, 11927, 11941, 11946, 11947 |
| Penney | 10003, 10018, 10019, 10021, 10027, 10030, 10032, 10039, 10047, 10051, 10060, 10135, 10156, 10178, 11347, 11907, 11919, 11926 |
| Philco | 10019, 10020, 10030, 10054, 10096 |
| Philips | 10037, 10054, 10690, 11154, 11454 |
| Pilot | 10019, 10030, 10039 |
| Pioneer | 10038, 10166, 10679, 10866, 11457 |
| Polaroid | 10765, 10865 |
| Portland | 10019, 10039, 10092 |
| Prima | 10761, 10783, 10815, 10817, 11933 |

## Setup Codes for TVs *(continued)*

| | |
|---|---|
| Princeton | 10700, 10717 |
| Prism | 10051 |
| Proscan | 10047, 10466, 11347, 11447, 11922 |
| Proton | 10003, 10052, 10178, 10466 |
| Pulsar | 10017, 10019 |
| Quasar | 10051, 10055, 10165, 10250, 10650, 11919, 11924 |
| RadioShack | 10019, 10030, 10032, 10039, 10047, 10056, 10154, 10165, 10178, 10180, 11904, 11920 |
| RCA | 10018, 10019, 10038, 10047, 10090, 10135, 10679, 11047, 11147, 11247, 11347, 11447, 11547, 11907, 11917, 11919, 11922, 11948, 11953, 11958 |
| Realistic | 10019, 10030, 10032, 10039, 10056,10154, 10165, 10178, 10180 |
| Rhapsody | 10185 |
| Runco | 10017, 10030, 10497, 10603 |
| Sampo | 10030, 10032, 10039, 10052, 11755 |
| Samsung | 10019, 10030, 10032, 10056, 10060, 10178, 10587, 10702, 10766, 10812, 10814, 11060, 11903 |
| Samsux | 10039 |
| Sansui | 10463, 11904, 11911, 11929, 11935 |
| Sanyo | 10088, 10154, 10159, 10376, 10424, 10798, 10799, 10893, 11907 |
| Scimitsu | 10019 |
| Scotch | 10178 |
| Scott | 10019, 10178, 10179, 10180, 10236 |
| Sears | 10047, 10054, 10056, 10154, 10156, 10159, 10171, 10178, 10179, 11904, 11926 |
| Sharp | 10039, 10093, 10157, 10165, 10256, 10386, 10491, 10688, 10689, 10787, 10818, 10851, 11917 |
| Sharper Image | 11950 |
| Sheng Chia | 10093 |
| Shogun | 10019 |
| Signature | 10016 |
| Simpson | 10186, 10187 |
| Sole | 10813 |
| Sony | 10000, 10080, 10111, 10834, 11100, 11300, 11904, 11925 |
| Soundesign | 10178, 10179, 10180, 10186 |
| Sova | 11952 |
| Spectricon | 10003 |
| Squareview | 10171 |
| SSS | 10019, 10180 |
| Starlite | 10180 |
| Studio Experience | 10843 |
| Superscan | 10093, 10864 |
| Supre-Macy | 10046 |
| Supreme | 10000 |
| SVA | 10587, 10748, 10768, 10865, 10870, 10871, 10872 |
| Sylvania | 10020, 10030, 10054, 10096, 10171, 10381, 11931, 11944 |
| Symphonic | 10171, 10180, 11904, 11913 |
| Tandy | 10093 |
| Tatung | 10003, 10055, 11756 |
| Technics | 10051, 10250 |
| Technol Ace | 10179 |
| Techview | 10847 |
| Techwood | 10003, 10051, 10056 |
| Teknika | 10016, 10019, 10039, 10054, 10056, 10060, 10092, 10150, 10179, 10180, 10186 |
| Telefunken | 10056, 10702 |
| Thomas | 11904 |
| TMK | 10056, 10177, 10178 |
| TNCi | 10017 |
| Toshiba | 10036, 10060, 10154, 10156, 10509, 10650, 10832, 10845, 11156, 11256, 11356, 11656, 11704, 11918, 11935, 11936, 11945 |
| Tosonic | 10185 |
| Totevision | 10039 |
| Trical | 10157 |
| TVS | 10463 |
| Ultra | 10391 |
| Universal | 10027 |
| Vector Research | 10030 |
| Victor | 10036, 10053, 10160, 10653 |
| Vidikron | 10054 |
| Vidtech | 10019, 10036, 10178 |
| Viewsonic | 10857, 10864, 10885, 11755 |
| Viking | 10046 |
| Vizio | 10864, 10885, 11756 |
| Wards | 10016, 10019, 10020, 10021, 10027, 10030, 10054, 10056, 10080, 10096, 10111, 10165, 10178, 10179, 10866, 11156 |
| Waycon | 10156 |
| Westinghouse | 10000, 10451, 10885, 10889 |
| White Westinghouse | 10463, 10623, 11909 |
| Yamaha | 10019, 10030, 10769, 10833, 10838, 10839 |
| Zenith | 10016, 10017, 10092, 10178, 10463, 11145, 11904, 11909, 11911, 11929 |
| Zonda | 10003 |

## Setup Codes for VCRs

| | |
|---|---|
| ABS | 21972 |
| Admiral | 20048, 20209, 20479 |
| Adventura | 20000 |
| Aiko | 20278 |
| Aiwa | 20000, 20037, 20124, 20307, 20348, 20406, 20468, 20479 |
| Akai | 20041, 20061, 20106, 20175 |
| Alienware | 21972 |
| America Action | 20278 |
| American High | 20035 |
| Asha | 20240 |
| Audiovox | 20037, 20278 |
| Beaumark | 20240 |
| Bell & Howell | 20104 |
| Broksonic | 20002, 20121, 20184, 20209, 20295, 20348, 20479, 21479 |
| Calix | 20037 |
| Canon | 20035, 20167, 21174 |
| Carver | 20081 |
| CCE | 20072, 20278 |
| Citizen | 20037, 20278, 21278 |
| Colt | 20072 |
| Craig | 20037, 20047, 20072, 20240, 20271 |
| Curtis Mathes | 20035, 20041, 20060, 20162, 20760, 21035 |
| Cybernex | 20240 |
| CyberPower | 21972 |
| Daewoo | 20045, 20278, 20561, 20637, 21278 |
| Dell | 21972 |
| Denon | 20042 |
| DirecTV | 20739, 21949, 21954, 21989 |
| Dish Network | 21944 |
| Dish Network System | 21943, 21944, 21945, 21946 |
| Dishpro | 21943, 21944 |
| Durabrand | 20038, 20039 |
| Dynatech | 20000 |
| Echostar | 21943, 21944, 21945, 21946 |
| Electrohome | 20037, 20043 |
| Electrophonic | 20037 |
| Emerex | 20032 |
| Emerson | 20000, 20002, 20036, 20037, 20043, 20061, 20068, 20121, 20184, 20208, 20209, 20212, 20278, 20295, 20348, 20479, 20561, 20593, 20637, 21278, 21479, 21593 |
| Euro1 | 21962 |
| Expressvu | 21944 |
| Fisher | 20047, 20054, 20066, 20104 |
| Fuji | 20033, 20035 |
| Fujitsu | 20045, 20052, 20366 |
| Funai | 20000, 20593, 21593 |
| Garrard | 20000 |
| Gateway | 21972 |
| GE | 20035, 20060, 20202, 20240, 20760, 20761, 20807, 21035, 21060 |
| General | 20045, 20052, 20366 |
| Go Video | 20240, 20432, 20526, 20643 |
| GOI | 21944 |
| GoldStar | 20037, 20038, 21237 |
| Gradiente | 20000 |
| Harley Davidson | 20000 |
| Harman/Kardon | 20038, 20081 |
| Harwood | 20068, 20072 |
| Hauppauge | 21992 |
| Headquarter | 20046 |
| Hewlett Packard | 21972 |
| HI-Q | 20047 |
| Hitachi | 20000, 20037, 20041, 20042, 20089, 20105, 20166, 21037, |
| Howard Computers | 21972 |
| HP | 21972 |
| HTS | 21944 |
| Hughes Network Systems | 20042, 20739, 21949 |
| Humax | 20739 |
| Hush | 21972 |
| Hyundai | 21951 |
| iBUYPOWER | 21972 |
| Jensen | 20041 |
| JVC | 20008, 20041, 20067, 20384, 21162, 21944, 21945 |
| KEC | 20037, 20278 |
| Kenwood | 20038, 20041, 20067, 20384 |
| KLH | 20072 |
| Kodak | 20035, 20037 |
| LG | 21037, 22010 |
| Linksys | 21972 |
| Lloyd's | 20000, 20208 |
| Logik | 20072 |
| LXI | 20037 |
| Magnasonic | 20593, 21278 |
| Magnavox | 20000, 20035, 20039, 20081, 20110, 20563, 20593, 21781 |
| Magnin | 20240 |
| Marantz | 20035, 20081, 21381 |
| Marta | 20037 |
| Matsushita | 20035, 20162, 20226, 20227, 20367, 21162 |
| Media Center PC | 21972 |
| MEI | 20035 |
| Memorex | 20000, 20035, 20037, 20039, 20046, 20047, 20048, 20104, 20162, 20209, 20240, 20307, 20348, 20479, 21037, 21162, 21237, 21262 |
| MGA | 20043, 20061, 20240 |
| MGN Technology | 20240 |
| Microsoft | 21972 |
| Mind | 21972 |
| Minolta | 20042, 20105 |
| Mitsubishi | 20043, 20061, 20067, 20173, 20807 |
| Motorola | 20035, 20048 |
| MTC | 20000, 20240 |
| Multitech | 20000, 20072 |
| NAD | 20058 |
| NEC | 20038, 20040, 20041, 20067, 20104, 20370 |
| Nikko | 20037 |
| Nikon | 20034, 20253 |
| Niveus Media | 21972 |
| Noblex | 20240 |
| Northgate | 21972 |
| Olympus | 20035, 20226, 21046 |
| Onkyo | 20222 |

## *Setup Codes for VCRs (continued)*

| | |
|---|---|
| Optimus | 20037, 20048, 20058, 20104, 20162, 20432, 20593, 21048, 21062, 21162, 21262 |
| Optonica | 20062 |
| Orion | 20002, 20184, 20209, 20295, 20479, 21479 |
| Panarex | 21950 |
| Panasonic | 20035, 20077, 20162, 20225, 20226, 20227, 20367, 20614, 20616, 21035, 21062, 21162, 21262 |
| Pansat | 21950 |
| Penney | 20035, 20037, 20038, 20040, 20042, 20054, 20240, 21035, 21237 |
| Pentax | 20042, 20105 |
| Philco | 20035 |
| Philips | 20035, 20062, 20081, 20110, 20618, 20739, 21081, 21181, 21381, 21949 |
| Pilot | 20037 |
| Pioneer | 20058, 20067 |
| Polk Audio | 20081 |
| Presidian | 21593 |
| Profitronic | 20240 |
| Proscan | 20060, 20202, 20760, 20761, 21060, 21954 |
| Protec | 20072 |
| Pulsar | 20039 |
| Quarter | 20046 |
| Quartz | 20046 |
| Quasar | 20035, 20077, 20162, 21035, 21162 |
| RadioShack | 20000, 21037 |
| Radix | 20037 |
| Randex | 20037 |
| RCA | 20042, 20058, 20060, 20077, 20105, 20106, 20202, 20240, 20453, 20760, 20761, 20807, 20880,21035, 21060, 21954,21964, 21989 |
| Realistic | 20000, 20035, 20037, 20046, 20047,20048, 20062, 20066,20104 |
| ReplayTV | 20614, 20616 |
| Ricavision | 21972 |
| Ricoh | 20034, 20253 |
| Runco | 20039 |
| Samsung | 20045, 20240, 20739, 21014 |
| Samtron | 20643 |
| Sanky | 20039, 20048 |
| Sansui | 20000, 20041, 20067, 20209, 20271,20479, 21479 |
| Sanyo | 20046, 20047, 20104, 20159, 20240,20368, 20369 |
| Scott | 20043, 20045, 20121, 20184, 20210, 20212 |
| Sears | 20000, 20035, 20037, 20042, 20046, 20047, 20054, 20066, 20104, 20105, 21237 |
| Sharp | 20048, 20062, 20363, 20738, 20807, 20848 |
| Shintom | 20072 |
| Shogun | 20240 |
| Singer | 20072 |
| Sonic Blue | 20614, 20616 |
| Sony | 20000, 20032, 20033, 20034, 20035, 20253, 20586, 20636, 20639, 20640, 21032, 21232, 21956, 21957, 21972 |
| Stack 9 | 21972 |
| STS | 20042 |
| Sunpak | 20253 |
| Sylvania | 20000, 20035, 20043, 20081, 20110, 20593, 21593, 21781 |
| Symphonic | 20000, 20593, 21593 |
| Systemax | 21972 |
| Tagar Systems | 21972 |
| Tatung | 20041 |
| Teac | 20000, 20041 |
| Technics | 20035, 20162 |
| Teknika | 20000, 20035, 20037, 20052 |
| Thomas | 20000 |
| Tivo | 20618, 20636, 20739, 21956, 21957, 21503 |
| TMK | 20036, 20208, 20240 |
| Toshiba | 20042, 20043, 20045, 20066, 20209, 20210, 20212, 20366, 20828, 20845, 21008, 21145, 21972, 21503 |
| Totevision | 20037, 20240 |
| Touch | 21972 |
| UltimateTV | 21989 |
| Unitech | 20240 |
| Vector | 20045 |
| Vector Research | 20038, 20040 |
| Victor | 20041 |
| Video Concepts | 20040, 20045, 20061 |
| Videomagic | 20037 |
| Videosonic | 20240 |
| Viewsonic | 21972 |
| Villain | 20000 |
| Voodoo | 21972 |
| Wards | 20000, 20035, 20042, 20047, 20048, 20060, 20062, 20072, 20081, 20212, 20240, 20760 |
| White Westinghouse | 20072, 20209, 20637 |
| XR-1000 | 20000, 20035, 20072 |
| Yamaha | 20038 |
| Zenith | 20000, 20033, 20034, 20039, 20209, 20479, 20637, 21139, 21479 |
| ZT Group | 21972 |

## MCA-C5 Multizone Controller

| | |
|---|---|
| **Dimensions:** | 17"W x 3.5"H x 17.2"D (43.2 x 9 x 43.6 cm) |
| **Weight:** | 28.8 lbs. (13.1 kg) |
| **Power Supply:** | 110 or 240 VAC |
| **Fuse Rating:** | 100-120V/T5.0A 250V US and Canada<br>220-240V/T3.15A 250V Europe |
| **Power Consumption:** | 600 watts maximum |
| **Frequency Response:** | 20Hz-20kHz +/- 1 dB at 1W output into 8 ohms |
| **Watts per channel:** | 40W*<br>*1kHz into 8 ohms with <5% THD+N,<br>2 channels at full power, 10 channels at 1/8th |
| **Total Harmonic Distortion:** | <0.05%, 1W output into 8 ohms 20Hz-20kHz |
| **Signal to Noise Ratio:** | 93 dB unweighted, 96 dB A-weighted |
| **Audio Source Inputs:** | 8 (including internal tuner and page input) |
| **Audio Zone Outputs:** | 6 Speaker Level (Zones 1-6)<br>(8 Line Level fixed or variable) |
| **Trigger Outputs:** | 8 12VDC 100mA, 1 common |
| **Trigger Inputs:** | 1 Home Theater 12VDC max |
| **Speaker connection:** | 6 detachable 4 pole connectors |
| **Keypad ports:** | 8 RJ-45 T568A standard |
| **IR Outputs:** | 6 routed, 1 common |
| **Communication ports:** | Front- 1 USB 2.0/1.1<br>Rear- 1 Serial RS232, 19.2 kHz baud rate<br>1 Ethernet RJ-45, 10/100 Base T<br>2 RJ-45 RNET links In/Out |
| **Frequency Range:** | AM 530 - 1710 kHz<br>FM 87.7 - 107.9 MHz |
| **Antenna impedance AM**: | 300 Ohm balanced |
| **Impedance FM:** | 75 Ohm unbalanced |
| **Sensitivity:** | AM: @20 dB S/N 55 dBu<br>FM: @30 dB S/N 6 dB max 12 dBu |
| **Image rejection:** | AM: 33 dB FM: 80dB |
| **S/N ratio:** | AM: 45dB FM: 60 dB |

## MDK-C5 Keypad

| | |
|---|---|
| **Power requirements:** | 275mA @ 12VDC MAX |
| **CAT-5e connection:** | RJ-45 (T568A standard) |
| **Display:** | 70 mm W x 35 mm H<br>high resolution LCD |
| **Controls:** | Eleven backlit hard buttons |
| **Wall surface dimensions:** | 4.5"W x 4.5"H<br>(11.43 x 11.43 cm) |
| **Inside box dimensions:** | 3.5"W x 1.5"D x 2.75"H<br>(8.9 x 3.8 x 6.9 cm) |
| **Weight:** | 1 lbs. (0.45 kg) |

### *Warranty*

The Russound MCA-C5 Controller Amplifier and MDK-C5 Keypad are fully guaranteed against all defects in materials and workmanship for two (2) years from the date of purchase. During this period, Russound will replace any defective parts and correct any defect in workmanship without charge for either parts or labor.

For this warranty to apply, the unit must be installed and used according to its written instructions. If service is necessary, it must be performed by Russound. The unit must be returned to Russound at the owner's expense and with prior written permission. Accidental damage and shipping damage are not considered defects, nor is damage resulting from abuse or from servicing by an agency or person not specifically authorized in writing by Russound.

This Warranty does not cover:

- Damage caused by abuse, accident, misuse, negligence, or improper installation or operation
- Power surges and lightning strikes
- Normal wear and maintenance
- Products that have been altered or modified
- Any product whose identifying number, decal, serial number, etc. has been altered, defaced or removed.

Russound sells products only through authorized Dealers and Distributors to ensure that customers obtain proper support and service. Any Russound product purchased from an unauthorized dealer or other source, including retailers, mail order sellers and online sellers will not be honored or serviced under existing Russound warranty policy. Any sale of products by an unauthorized source or other manner not authorized by Russound shall void the warranty on the applicable product.

Damage to or destruction of components due to application of excessive power voids the warranty on those parts. In these cases, repairs will be made on the basis of the retail value of the parts and labor. To return for repairs, the unit must be shipped to Russound at the owner's expense, along with a note explaining the nature of service required. Be sure to pack the unit in a corrugated container with at least three (3) inches of resilient material to protect the unit from damage in transit.

Before returning a unit for repair, call Russound at (603) 659-5170 for a Return Authorization number. Write this number on the shipping label and ship to:

**Russound**
ATTN: Service
5 Forbes Road
Newmarket, NH 03857

Due to continual efforts to improve product quality as new technology and techniques become available, Russound/FMP, Inc. reserves the right to revise system specifications without notice.

Russound

# MCA-C5

## 8 Source Multizone Controller Amplifier
## User and Installation Manual

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